RAILROAD GAZETTE

FRIDAY, NOVEMBER 25.

Contributions.

Earthwork Calculations.

TO THE EDITOR OF THE RAILROAD GAZETTE:

My formula for toe of dump in your issue of Sept. 2 was incorrect, as all the calculations then made were for a 6 ft. fill, and I find there are three variable elements in the case, namely, road-bed, slope ratio and fill.

The formula for cubical content of a railroad embankment from crown to toe of bank should be as follows:

Let W = cubical contents of wedge.
S = slope ratio.
R = width of road-bed. } Variable elements.
F = fill.

Then cubical content of entire section from crown to toe

$$= W + \left(W \times \frac{8\,S \times F + 6}{R}\right)$$

GEORGE BAYLEY WILLIAMS.

Train Accidents in October.

The following accidents are included in our record for the month of October:

REAR COLLISIONS.

On the 1st a section of a circus train on the Chicago & Northwestern road ran into a preceding section near Cedar Rapids, Ia., damaging several cars.

On the evening of the 1st a freight train on the Lake Shore & Michigan Southern road ran into a preceding freight at Harbor Creek, Pa., wrecking several cars.

On the morning of the 2d a freight train on the Richmond & Danville road ran into a preceding freight which had stopped to take water near Greensboro, N. C. Six cars were wrecked and an engine damaged.

On the morning of the 4th a freight train on the Chicago, St. Paul, Minneapolis & Omaha road ran into a car left standing on the main track at Hadley, Minn. Some damage was done and two trainmen hurt.

On the morning of the 5th a freight car on the Northern Central road broke loose and ran down a steep grade at great speed and into some cars standing in the yard at Shamokin, Pa., making a bad wreck.

On the evening of the 5th a passenger train on the New York, Lake Erie & Western road ran into the rear of some cars which had broken loose from a freight at Vandalia, N. Y. The engine and several cars were wrecked, and the wreck caught fire and was partly destroyed. The engineer was badly hurt.

On the afternoon of the 6th a Hanover Branch engine started off alone, from some unknown cause, and ran along the Old Colony track to Weymouth, Mass., where it ran into a passenger train, doing some damage.

On the evening of the 7th a freight train on the Cincinnati, Indianapolis, St. Louis & Chicago road ran into a preceding freight near Fowler, Ind., damaging several cars.

On the morning of the 8th a freight train on the Pennsylvania Railroad ran into the rear of a preceding freight near Leaman Place, Pa. The engine and 15 cars were badly broken and the engineer hurt.

About noon on the 11th an engine on the Western & Atlantic road ran into a passenger train on a siding in Atlanta, Ga., damaging the tender and a car.

On the 11th a freight train on the New York & New England road ran over a misplaced switch and into another freight standing on a siding at East Douglas, Mass. Both engines and several cars were damaged.

On the morning of the 12th a passenger train on the Long Island road ran into another passenger train near Whitestone Junction, N. Y., damaging two cars.

On the evening of the 12th a freight train on the New York & New England road ran into the rear of a gravel train at Hyde Park, Mass., wrecking a car and killing two men.

On the morning of the 13th a freight train on the Burlington & Missouri River Railroad in Nebraska broke in two near Table Rock, Neb., and the rear cars ran back down grade and into the rear of a construction train, wrecking several cars and killing three men.

On the morning of the 14th a freight train on the Fitchburg road ran into a preceding freight near Montague, Mass., wrecking several cars.

On the morning of the 14th an extra freight train on the Naugatuck road ran into the rear of a regular freight near Waterbury, Conn. The engine and several cars were damaged, the fireman badly and five passengers in the caboose slightly hurt.

On the 16th a passenger train on the New York, Lake Erie & Western road ran into the rear of a freight near Vosburg, N. Y., damaging several cars. The engineer and fireman were hurt.

On the evening of the 16th a passenger train on the Missouri Pacific road ran into the rear of a freight which was going into a siding at Meramec, Mo. An engine and several cars were damaged, two trainmen and two tramps hurt.

On the morning of the 18th a repair train on the Chicago & Northwestern road ran into a freight train stopping at Canfield, Ill., damaging several cars and injuring a brakeman.

On the evening of the 18th a freight train backed into a passenger train which had stopped on the Chicago & Northwestern road in Chicago, Ill. One man was killed and seven hurt.

On the morning of the 19th a freight train on the Pennsylvania Railroad broke in two near Altoona, Pa., and the rear section ran into the forward one, wrecking several cars.

On the morning of the 19th a freight train on the Connecticut River road broke in two near Greenfield, Mass., and the rear section ran into the forward one, wrecking several cars and injuring two brakemen.

On the afternoon of the 19th as a freight train on the Cincinnati Southern road was backing up to take on some cars, at McKinney, Ky., the engine became unmanageable from some cause and backed into the cars at high speed, wrecking them, killing three trainmen and two others who were on the cars, and injuring two more.

On the 22d a repair train on the Southeastern Railway, of Canada, ran into the rear of a freight train near North Troy, Vt., damaging several cars.

On the afternoon of the 22d a repair train on the Philadelphia & Reading road ran into the rear of a freight train near Spring Mill, Pa., damaging several cars.

On the evening of the 22d a light engine on the New York, New Haven & Hartford road ran into the rear of a freight train at Berlin, Conn., wrecking two cars.

On the morning of the 23d a freight train on the New York Central & Hudson River road broke in two near Buffalo, N. Y., and the rear section ran into the forward one, wrecking several cars.

A few minutes afterward a following freight ran into the wrecked train, doing more damage.

On the 23d a yard engine on the Cincinnati, Hamilton & Dayton road ran into the rear of a freight train in Dayton, O., wrecking two cars and injuring the conductor.

On the evening of the 23d a freight train on the Pittsburgh, Ft. Wayne & Chicago ran into a preceding freight which had stopped for water at Bucyrus, O., wrecking the caboose and injuring two men.

On the afternoon of the 24th a freight train on the Fitchburg road ran into a preceding freight train near Pequoig, Mass., damaging two cars and killing a brakeman.

On the night of the 25th a special passenger train on the Virginia Midland road ran into the rear of a freight train near Rockfish, Va., wrecking two cars and injuring two trainmen.

On the morning of the 27th a passenger train on the Southeastern Railway, of Canada, ran over a misplaced switch at Richford, Vt., and into a freight engine on a siding, doing some damage.

On the afternoon of the 29th a freight train on the Pennsylvania Railroad ran into a preceding train near Lancaster, Pa., wrecking several cars. An oil car caught fire and seven cars were burned up.

On the 30th a freight train on the Grand Trunk road ran into the rear of a preceding freight which had stopped near Brockville, Ont., and sent out no signal. Two cars were wrecked.

On the night of the 31st a freight train on the Pittsburgh, Cincinnati & St. Louis road ran into another freight on a siding in Columbus, O., damaging several cars.

BUTTING COLLISIONS.

Very early on the morning of the 1st there was a butting collision between two freight trains on the St. Paul, Minneapolis & Manitoba road near Melrose, Minn. Both engines and 15 cars were piled up in a bad wreck, a fireman and a brakeman hurt. The wreck caught fire and was destroyed.

On the evening of the 3d several cars broke loose from a freight train on the New York, Lake Erie & Western road at Avon, N. Y., and ran back into the head of a following passenger train. The engine and several cars were wrecked, the engineer killed and fireman hurt.

On the evening of the 4th there was a butting collision between a passenger and a gravel train in the tunnel at Salem, Mass., on the Eastern road. Both engines were badly damaged. It is said that the signals were displayed for both trains to pass on. One man was hurt.

On the morning of the 7th there was a butting collision between two freight trains on the Indianapolis & St. Louis road near Greencastle, Ind. Both engines and several cars were wrecked.

On the evening of the 19th there was a butting collision between two freight trains at Bismarck Grove, Kan., on the Union Pacific road.

On the evening of the 19th there was a butting collision between two coal trains on the Lehigh Valley road in Easton, Pa. Both engines and several cars were damaged.

Early on the morning of the 20th there was a butting collision between two freight trains on the Cleveland, Columbus, Cincinnati & Indianapolis road near Ostrander, O., by which both engines and several cars were wrecked.

On the morning of the 30th there was a butting collision between a passenger and a freight train on the Utah & Northern road near Market Lake, Idaho. Both engines and several cars were wrecked, one trainman killed and five hurt.

On the 22d there was a butting collision between two freight trains on the Baltimore & Ohio road near Mt. Vernon, O., by which both engines and 15 cars were badly wrecked. The accident is said to have been caused by a dispatcher's mistake.

On the morning of the 24th there was a butting collision between a freight train and a wild engine on the Cleveland, Tuscarawas Valley & Wheeling road near Massillon, O. An engineer and fireman were hurt.

On the morning of the 29th a wild engine and a freight train on the Baltimore & Ohio road had a butting collision near Mansfield, O. Both engines were damaged, a fireman killed and three others hurt.

On the night of the 30th there was a butting collision between a passenger and a freight train on the Chicago, Milwaukee & St. Paul road near Leaf River, Ill., by which both engines and several cars were wrecked, an engineer and fireman hurt.

On the night of the 30th there was a butting collision between two freighs trains on the Chicago & Alton road, near Carlinsville, Ill., by which both engines and 12 cars were wrecked, and a brakeman killed.

CROSSING COLLISIONS.

On the evening of the 3d a Wabash, St. Louis & Pacific freight train ran into a Baltimore & Ohio freight at the crossing in Defiance, O., damaging an engine and car.

On the morning of the 8th a Chicago, Milwaukee & St. Paul passenger train ran into a Chicago & Northwestern freight at the crossing at Fulton Junction, Ill. A freight car was thrown over on the station platform, killing two men and injuring three others.

DERAILMENT, BROKEN RAIL.

Very early on the morning of the 19th, a passenger train on the Chicago, Milwaukee & St. Paul road struck a broken rail near Pewaukee, Wis., and six cars left the track, two of them going down a bank into the water. There were 46 persons hurt, most of them slightly.

DERAILMENTS, BROKEN WHEEL.

On the afternoon of the 3d several cars of a freight train on the New York & New England road were thrown from the track near Walpole, Mass., by a broken wheel.

On the morning of the 12th several cars of a freight train on the Grand Trunk road were thrown from the track near Scarboro, Ont., by a broken wheel.

DERAILMENT, BROKEN AXLE.

On the morning of the 29th a number of cars of a coal train on the Central Railroad of New Jersey were thrown from the track near East Rahway, N. J., by a broken axle.

DERAILMENTS, BROKEN TRUCK.

On the morning of the 7th several cars of a freight train on the Naugatuck road were thrown from the track in Bridgeport, Conn., by the breaking of a truck. The cars were badly damaged, and the platform of the station torn up.

Early on the morning of the 15th several cars of a freight train on the Pennsylvania Railroad were thrown from the track near Christiana, Pa., by the breaking of a truck.

DERAILMENT, BROKEN CAR.

On the morning of the 14th a flat car heavily loaded with stone on the Port Jervis & Monticello road broke in two near Port Jervis, N. Y., and went off the track.

DERAILMENTS, BROKEN BRIDGE.

On the 14th the engine and several cars of a freight train on the New York, Ontario & Western road broke through a bridge at Westfield Flats, N. Y., and were wrecked. A brakeman was badly hurt.

On the morning of the 17th a freight train on the Burlington, Cedar Rapids & Northern road broke through a bridge near Iowa City, Ia., the abutments of which had been partly washed out by a freshet. Three trainmen were hurt.

On the morning of the 24th a freight train on the Illinois Midland road went through a bridge at Sugar Creek, Ill., and several cars were wrecked.

On the morning of the 24th the engine of a construction train on the Central Iowa road broke through a bridge near Marshalltown, Ia. One man was hurt. The bridge was just finished.

On the morning of the 27th a shifting engine on the Delaware, Lackawanna & Western road broke through a small bridge in Utica, N. Y., and fell into the mud.

On the evening of the 28th a freight train on the Missouri Pacific road broke through a small bridge near Bement, Mo., and three cars went down and were wrecked.

DERAILMENT, SPREADING OF RAILS.

At noon on the 12th a freight train on the Wabash, St. Louis & Pacific road was thrown from the track near Springfield, Ill., probably by the spreading of the rails. One car was upset and the road blocked four hours.

DERAILMENTS, LAND-SLIDE.

On the evening of the 30th, a passenger train on the East Tennessee, Virginia & Georgia road ran into a rock and earth slide near Cleveland, Tenn. The engine and two cars were upset and one man hurt.

On the night of the 30th a freight train on the Norfolk & Western road ran into a land-slide near Max's Meadow, Va., and several cars were wrecked.

On the morning of the 31st a freight train on the East Tennessee, Virginia & Georgia ran into a land-slide near Lenoir, Tenn., and was thrown from the track.

On the night of the 31st a freight train on the Pennsylvania Railroad ran into a land-slide near Safe Harbor, Pa., and the engine and six cars went down a bank into the Subquehanna, killing the engineer and injuring the fireman.

DERAILMENT, WIND.

On the 18th a passenger train on the Des Moines & Ft. Dodge road was blown from the track by a high wind near Perry, Ia.

DERAILMENT, ACCIDENTAL OBSTRUCTION.

On the afternoon of the 26th a construction train on the Chicago & Northwestern road struck a push car on a bridge near Humboldt, Ia., and the engine and several cars were thrown from the track and over the bridge. A man was killed and another fatally hurt.

DERAILMENTS, CATTLE.

On the night of the 8th a train on the Chatham Branch ran over a steer near Nelson, N. B., and the engine was thrown from the track.

Very early on the morning of the 10th a freight train on the East Tennessee, Virginia & Georgia road ran over a cow near Sweetwater, Tenn., and the engine and eight cars were thrown from the track.

Very early on the morning of the 8th a passenger train on the Chicago, St. Paul, Minneapolis & Omaha road ran over a cow near Sioux City, Ia. The engine was thrown from the track and the engineer hurt.

On the morning of the 13th a freight train on the Chicago, St. Paul, Minneapolis & Omaha road ran over a cow near St. Peter, Minn., and the engine and 10 cars were thrown from the track, killing the fireman and a brakeman and injuring another man.

On the morning of the 16th a passenger train on the Jeffersonville, Madison & Indianapolis road ran over a cow near Jeffersonville, Ind., and the whole train was thrown from the track. The conductor was killed and a passenger hurt.

On the afternoon of the 17th a freight train on the Baltimore & Ohio road ran over a steer near Glenford, O. The engine was thrown from the track, the fireman and brakeman hurt.

On the night of the 27th a freight train on the Wabash, St. Louis & Pacific road ran over a horse near Memphis, Mo., and three cars were thrown from the track.

On the night of the 28th a passenger train on the Missouri, Kansas & Texas road struck a mule close to the bridge at Osage River, Mo. The engine was thrown from the track and went over the bridge into the river, killing the engineer, injuring the fireman and a boy.

On the evening of the 31st a passenger train on the Lake Erie & Western road ran over a horse near Boswell, Ind. The engine and baggage car were thrown from the track and upset, the engineer killed and fireman hurt.

On the night of the 31st a freight train on the Pittsburgh, Cincinnati & St. Louis road ran over a cow near Dayton, O., and the engine and several cars were thrown from the track.

DERAILMENTS, MISPLACED SWITCH.

On the morning of the 6th a coal train on the Lehigh Valley road was thrown from the track at Pattenburg, N. J., by a misplaced switch.

On the morning of the 15th a coal train on the Pittsburgh & Castle Shannon road was thrown from the track at Fair Haven, Pa., by a misplaced switch and the engine and eight cars were badly broken.

On the night of the 18th 20 cars of a coal train on the Central Railroad, of New Jersey, were thrown from the track at Elizabethport, N. J., by a misplaced switch.

On the evening of the 20th the engine of a freight train on the New York, Lake Erie & Western road was thrown from the track in Buffalo, N. Y., by a misplaced switch.

On the 25th the engine and one car of a freight train on the New York, Lake Erie & Western road were thrown from the track in Salamanca, N. Y., by a misplaced switch.

On the night of the 25th two cars of a freight train on the Troy & Greenfield road were thrown from the track in Greenfield, Mass., by a misplaced switch. One man jumped from the caboose and was hurt.

On the afternoon of the 27th a passenger train on the Northeastern Railroad, of Georgia, was thrown from the track at Harmony Grove, Ga., by a misplaced switch.

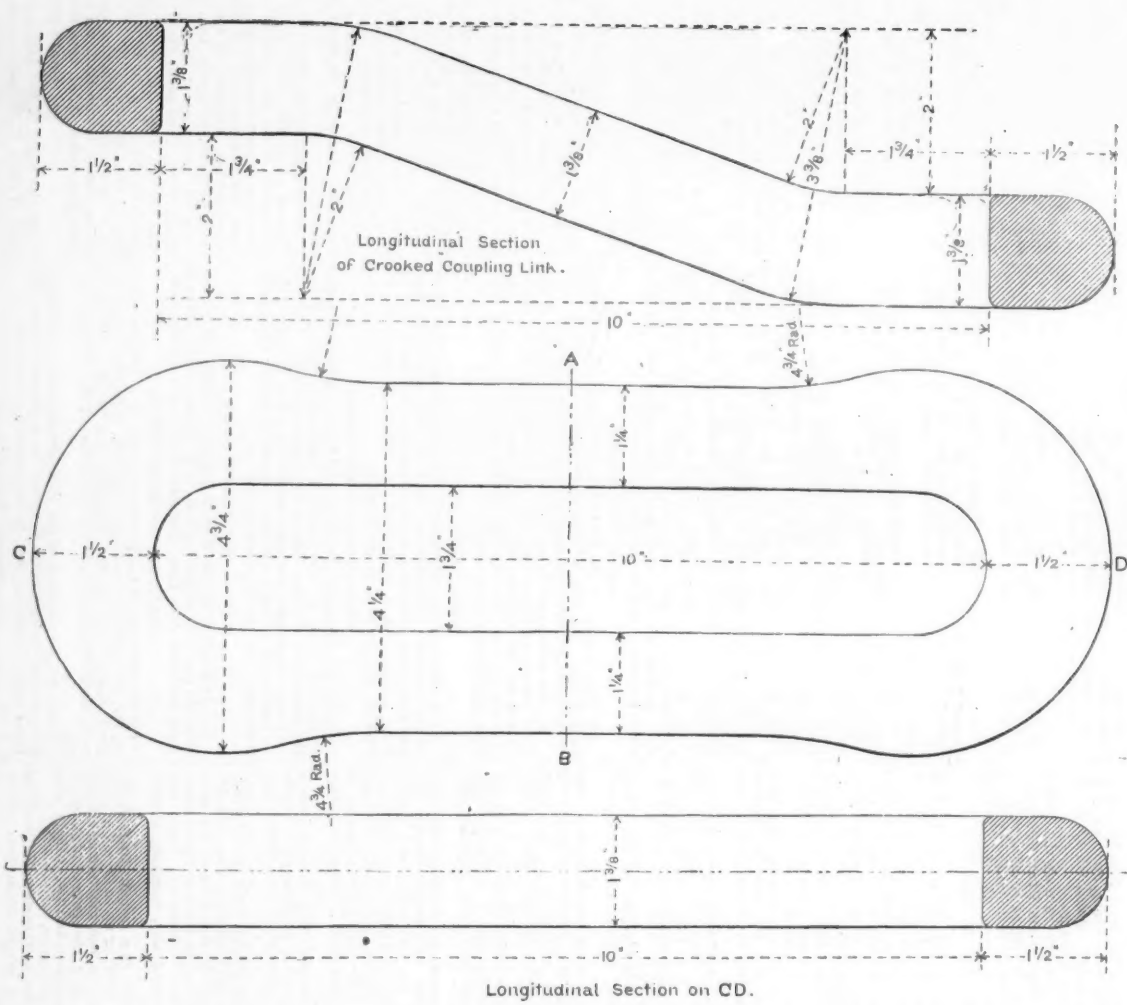
On the morning of the 28th a passenger train on the North Penn. Division of the Philadelphia & Reading road was thrown from the track at Sellersville, Pa., by a misplaced switch. The engine upset and was badly broken, killing the engineer.

On the evening of the 31st the engine of a passenger train on the Pennsylvania Railroad was thrown from the track in New Brunswick, N. J., by a misplaced switch.

MALICIOUS DERAILMENTS.

On the night of the 11th a passenger train on the Cincinnati, Wabash & Michigan road was thrown from the track at Claypool, Ind., by a purposely misplaced switch.

On the night of the 13th the engine of a freight train on



Scale, Half Size.

STANDARD CAR COUPLING LINKS AND PINS.

Recommended at a meeting of the Master Car-Builders of the New York Central and connecting roads, held at the Tift House, Buffalo, Jan. 13, 1881.

Drawn by M. N. Forney.

the Burlington, Cedar Rapids & Northern road was thrown from the track near Waterloo, Ia., where a rail had been purposely misplaced. The engineer was killed. Two boys have since been arrested for wrecking the train.

On the night of the 20th a construction train on the Baltimore & Cumberland Valley road was thrown from the track near Chambersburg, Pa., by a log wedged in a cattle guard by some parties unknown. The conductor was dangerously hurt.

On the morning of the 26th a passenger train on the Wabash, St. Louis & Pacific road was thrown from the track at South Whitley, Ind., by a switch which had been purposely misplaced. The fireman was hurt.

UNEXPLAINED DERAILMENTS.

On the night of the 1st a freight train on the Mobile & Ohio road ran off the track in Meridian, Miss., blocking the road all night.

On the morning of the 4th a passenger train on the Louisville & Nashville road ran off the track near Bolling, Ala., and several cars upset. A tramp, who was stealing a ride, was killed and two passengers hurt.

On the night of the 4th two cars of a freight train ran off the track at Ellicottville, N. Y., on the Rochester & Pittsburgh road.

On the night of the 4th a passenger train on the Pittsburgh, Cincinnati & St. Louis road ran off the track at Smithfield, O., injuring the engineer and fireman.

About noon on the 5th several cars of an oil train on the New York, Lake Erie & Western road ran off the track near Port Jervis, N. Y., and one of the tank cars caught fire. Fifteen cars were destroyed, the fire being finally stopped by firing slugs from a cannon into several tanks, allowing the oil to run out. The track for some distance was completely destroyed.

On the evening of the 7th the engine of a freight train on the Denver & Rio Grande road jumped the track near Leadville, Col., and rolled down a steep bank, killing the engineman and firer.

On the 9th a freight train on the Toledo, Delphos & Burlington road ran off the track near Kokomo, Ind., injuring the fireman.

On the night of the 9th several cars of a freight train on the St. Louis, Iron Mountain & Southern road ran off the track near Homan, Ark., and were wrecked.

On the night of the 11th several cars of a freight train on the Pennsylvania Railroad ran off the track near Summerhill, Pa., and were wrecked.

On the morning of the 12th a car of a freight train ran off the track in Plainfield, N. J., on the Central Railroad, of New Jersey.

On the morning of the 12th a car of a passenger train on the Pittsburgh, Cincinnati & St. Louis road ran off the track in Xenia, O., and upset.

On the morning of the 14th a car of a passenger train on the Chicago, Burlington & Quincy road ran off the track near Alexis, Ill., and upset.

Early on the morning of the 15th several cars of a freight train ran off the track near Collins, Pa., on the Pennsylvania Railroad.

On the night of the 15th six cars of a freight train on the Boston, Concord & Montreal road ran off the track in Laconia, N. H., and two of them ran into a small house near the track, doing much damage.

On the morning of the 18th the engine of a freight train on the Chicago, Milwaukee & St. Paul road ran off the track near Lanesboro, Minn., blocking the road five hours.

On the evening of the 19th two cars of a passenger train were thrown from the track at Gallatin, Tenn., on the Louisville & Nashville road.

On the morning of the 20th the engine of a freight train ran off the track at Hooker, Tenn., on the Nashville, Chattanooga & St. Louis road.

On the morning of the 20th a freight train on the St. Louis, Hanibal & Keokuk road ran off the track near McCune's Mill, Mo., wrecking several cars.

On the evening of the 20th a freight train on the Chicago, Burlington & Quincy road ran off the track in Creston, Ia., damaging 12 cars.

On the night of the 20th four cars of a freight train on the Peoria & Rock Island road ran off the track in Rock Island, Ill., at a place where the road was covered with water from a freshet.

On the morning of the 22d a freight train on the Pennsylvania Railroad ran off the track near Kittanning Point, Pa., causing some delay of trains.

On the morning of the 22d four cars of a passenger train on the Chicago & Grand Trunk road were thrown from the track and damaged near Battle Creek, Mich. Two persons were hurt.

On the morning of the 24th four cars of a freight train on the Louisville & Nashville road were thrown from the track near Pilot Knob, Ky. One man was hurt.

On the afternoon of the 24th several cars of a freight train on the Illinois Midland road ran off the track near Arcola, Ill., injuring four men.

On the evening of the 25th the engine of a passenger train on the St. Paul, Minneapolis & Manitoba road ran off the track in Minneapolis, Minn., and was slightly damaged.

On the evening of the 25th a passenger train on the Chicago, Milwaukee & St. Paul road ran off the track at Mendota, Minn., blocking the road several hours.

On the night of the 25th a car of a passenger train on the Cincinnati, Indianapolis, St. Louis & Chicago road ran off the track at Templeton, Ind.

Very early on the morning of the 26th a freight train on the Pittsburgh, Ft. Wayne & Chicago road ran off the track near Homewood, Pa., blocking the road eight hours.

On the morning of the 26th two cars of a freight train on the New York & New England road ran off the track in Hartford, Conn., and were damaged.

On the 27th several cars of a freight train on the Chicago, Burlington & Quincy road ran off the track at Patterson, Ia., and were wrecked.

On the evening of the 28th the engine of a passenger train on the Cincinnati, Indianapolis, St. Louis & Chicago road ran off the track at Valley Junction, O., delaying the train an hour.

On the morning of the 29th a car of a construction train on the Lehigh & Hudson River road ran off the track at Osmun's Cut, N. J., and ran over a bridge close by, falling into the Pequest River. A brakeman was hurt.

On the morning of the 29th the engine of a freight train on the Pittsburgh & Lake Erie road ran off the track in the yard at Pittsburgh, Pa.

On the evening of the 30th several cars of a freight train on the Texas & Pacific road ran off the track in Shreveport, La., and three cars were badly broken.

BOILER EXPLOSIONS.

About noon on the 14th the boiler of a yard engine on the Wabash, St. Louis & Pacific road exploded in Keokuk, Ia. The engine was crossing the bridge over the Mississippi at the time and the engineer says there was 120 lbs. pressure and three gauges of water. The forward part of the boiler was torn to pieces and the bridge damaged; three men in the cab were only slightly hurt. The boiler is said to have been over 20 years old.

On the morning of the 26th the engine of a freight train on the Indiana, Bloomington & Western road exploded its boiler just as it was starting from Champaign, Ill., with a freight train. The force of the explosion was downwards, lifting the engine from the track and throwing it over. The fireman was fatally scalded and a brakeman hurt.

OTHER ACCIDENT.

Very early on the morning of the 18th a dining car on a passenger train on the New York, Lake Erie & Western road caught fire when near Binghamton, N. Y., and was almost destroyed. The fire extended to the next car, a sleeping car, which was badly damaged.

This is a total of 131 accidents, whereby 31 persons were killed and 133 injured. Twenty accidents caused the death or one or more persons; 32 caused injury but not death, leaving 79, or 60.3 per cent., of the whole number in which no serious injury is recorded.

The record shows for the ten months of this year to Oct. 31 a total of 1,212 accidents, 328 killed and 1,337 injured; an average per month of 121 accidents, 33 killed and 134 injured. This year shows a large increase over any previous year in our record.

Investigation of Accidents to Railroad Employes in Canada.

The Legislative Assembly of the Province of Ontario last year considered this subject of sufficient importance to appoint a committee "to inquire into the subject of frequent accidents, in many cases with loss of life, to brakemen and others employed on railways." This committee made a report, which, with the evidence taken, has been printed, and forms a pamphlet of 82 pages. It contains so much information and throws so much light upon the subject that we give herewith an abstract of the most important testimony taken, which will be followed by the substance of the committee's report:

Mr. AYMOG, passenger conductor on the Northern Railway, was examined and testified that "Most of the accidents happen to brakemen and others employed on freight trains, on account of their inexperience. Most of those killed and hurt on our road are what we call 'fresh hands,' or men not having a great deal of experience. Most of the accidents happen by the men falling off the trains, and between the cars; that is, off the ends of the cars—between one car and the one next to it—principally during the night, passing from one end of the train to the other while making their way to attend to the brakes. The usual space between the cars when the train is in motion is about 2 or 2½ feet. Men do sometimes slide off the side of the car, but it is very rarely. The only thing, in my opinion, which could be done to lessen the accidents occasioned by men falling between the cars would be a kind of hand-rail on the end of the car.

"It would be a good thing to have the running boards of box cars extend over the ends of the cars. Filling in the frogs with wood has resulted in lessening the number of accidents from frogs. Our tracks have been protected in that way for years; some accidents happened before that, but there is no danger now; a man's foot can't get caught."

THOMAS BUTLER, an ex-conductor, testified: "The best practical remedy to prevent accidents happening in the coupling of cars is to have the bell-mouth large enough, so that as soon as the link enters, the pin would itself fall into its place. If the platform [running-board] along the centre of the top of the car were about three feet wide, and extended over each end of the car about 8 in. and if a light railing about 8 in. high ran along each side of the car, the danger would be greatly lessened. I would have no railings at the ends. Accidents happen from men sliding off both the sides and falling between the cars. I think about 10 in. should be left between the cars if the running-boards were extended. Most accidents occur about the brakes, and are often owing to defective brakes. In a train of fourteen cars, you would, perhaps, get two good brakes. Some have bad dogs, some have too much chain, and others have no chain at all; and some have no wheels, or bad wheels. A man does not know what kind of brakes he has till he puts his hand to use them; and in the hurry of running from one car to another a man is likely to get excited; and if he finds a bad break that will not work, down he may go. The real danger is, that many brakes are out of order. You will hardly find a train leaving any terminal station with all the brakes good. Sometimes you might find five or six good brakes on a train. A railing along the side of the running-board would not be an advantage. If the running-board were 3 ft. wide, that would do away with a good deal of danger. Low bridges are another cause of danger. I knew of four men who lost their lives owing to low bridges. I don't think the fringe has been useful as a warning to men approaching a bridge. When a man is excited, he sometimes will not mind it."

Mr. F. BROUGHTON, Manager of the Great Western Railway, testified as follows:

"The largest number of accidents occur in coupling cars. I never heard of an accident occurring in England through coupling cars. Here, a man, while walking backward with a train, gets caught in the frogs, and he goes down and the train passes over him. I would just explain to you, however, that considering the number of men employed, and the number of times they make couplings every year, the proportion of accidents is very small. In 1879, we had one man killed and 14 injured in couplings. The average number of trainmen employed by us — conductors, baggagemen, brakesmen, drivers and firemen—is 797, and the average number of yardsmen and switchmen 163. Last year we ran over our whole track about 15,000 trains, and in making up these trains, in shuntings at the different stations, and in taking on and taking off cars during the journey, we estimate that at least 50 different coupling operations take place on each train; that would make 750,000 couplings on our line in the year; or, with all these operations, only one man was killed and 14 were injured—one man injured to each 50,000 couplings. Of course, even that is too great a ratio; but I merely give you these figures to show that the occupation of a brakeman is not a much more dangerous occupation than many others. All of these accidents are reported, however slight. Some of the worst accidents, short of death, which we have experienced, happened to men who are at this moment at work on the trains; and in order to show you the little comparative risk they are subjected to, I have had prepared a statement, showing the length of service of our different brakemen, as follows:

Under 1 year	12
Over 1 year, and under 5	83
" 5 " " " 6	28
" 6 " " " 7	28
" 7 " " " 8	23
" 8 " " " 9	16
" 9 " " " 10	8
" 10 "	2
	200

So that, out of 200 brakemen, we have upward of 100 who have been over five years in the service. At the end of five years they are generally promoted to a higher position. This statement shows that the brakemen like the employment and remain in it; and also, I think, that it is not quite so dangerous an occupation as is supposed. I now hand in the following statement:

"*Return of the number of accidents to trainmen, yardmen and switchmen on the Great Western Railway for the five years, 1875, 1876, 1877, 1878, 1879:*

	Killed.	Injured.
Coupling cars	4	80
Falling off cars	6	10
Brakes falling	0	4
Caught in frogs, guard or wing rails	2	3
Trains thrown from track	8	6
Other causes	5	13
Totals	25	116

"*To employés other than the above:*

	Killed.	Injured.
Coupling cars	0	5
Getting on or off trains in motion	0	4
Standing on track and struck by engine	3	3
Trains thrown from track	0	4
Other causes	1	11
Totals	4	27

"Not 5 per cent. of these would be so injured that they could not continue to follow their occupation.

"There would be a difficulty in introducing a standard or uniform coupler, as you could not, of course, legislate foreign companies. Everything that is brought under our notice that appears to have merit we give consideration to. But I may tell you that if we gave consideration to every patentee—to every man who thinks he has invented something that is going to give salvation to railway employés—we should have to establish a bureau of patents. To ascertain how many different car-couplers have been patented in the United States, I telegraphed to the gentleman in charge of that department at Washington, and yesterday received the reply that there are now in the Patent Office there 1,750 different couplers. In Canada the case is similar. I have been shown 40 or 50, each of which was claimed to be *the* one. It is utterly impossible to experiment with every one of these devices; what we do is to wait development and gradually introduce what experience shows to be good. There is an association composed of master car-builders, who consider all these different patents, and our Superintendent of cars attends their meetings regularly. They meet about once a quarter, and their recommendations are gradually adopted by the railway companies. We have largely adopted a patent coupler which they seem to prefer. The end of the coupler is concaved to allow a man to get his hand out and in easily when he grasps the bar.

"Have never tried an automatic car-coupler. A new patentee is a man we fear, because their name is legion. Then, the subject has had the attention of the Master Car-Builders' Association, but they have not yet found a practical solution of the difficulty. In 1879 they issued a circular to yardmen and trainmen, and in it they suggested uniform height of draw-bar, condemned fixed pins and recommended that the dead-wood be directly over the draw-bar. They also recommended that the running-board should project a little over the ends of the cars, and that idea is being gradually introduced. The following statement shows the result of measurements of cars which I had made:

"*Return of all box freight cars passing terminal stations of the Great Western Railway on the 20th of January, 1880, showing the heights of same:*

STATION.	Number of cars.	Lowest height.	Greatest height.
Queen's Wharf, Toronto	123	10 ft. 2 in.*	11 ft. 8 in.
Clifton	275	10 ft. 9 in.	11 ft. 9 in.
Fort Erie	120	10 ft. 11½ in.	11 ft. 8 in.
Windsor	359	10 ft. 9 in.	11 ft. 9 in.
	1		11 ft. 11 in.

* Two of this height only, the general height being 10 ft. 10 in.

"The running-board should not be less than 20 or 24 in. wide. If the boards of which it is made are placed longitudinally, they are apt, from their length, to spring from the beat in summer and cold in winter. Short matched boards placed crosswise are considered the best and safest. All our cars are now built with the running-boards 24 in. wide. Then the men have often great difficulty in going from flat cars to box cars, and the recommendation of the car-builders, which we have adopted and are carrying out, is to have a vertical bar and step placed at the end of the box cars, with the ladder at the side, so that a man can swing himself around to the ladder when going from a flat car to a box-car, or *vice versa*. The brakemen all prefer the ladder to be at the side and next the brake. The ladder should be made of round iron, otherwise it is likely to become covered with ice in cold weather. The safety of life in railway trains depends largely upon these little things, and on companies keeping their stock in good order. There should be an effort to introduce, as rapidly as possible, wide-mouthed couplers. The uniform height of cars is another important matter. We are introducing as fast as we can the uniform height of the draw-bars—2 ft. 9 in. from the top of the rail; and the other recommendations of the master car-builders are being gradually adopted. They have recommended that the running-board should not be less than 18 in. wide. Our brakemen think it ought to be 24 in., and we are adopting that width.

"The question has been raised whether the men should not be compelled to use a stick for coupling. At present they are obliged to hold the link with one hand and put the pin in with the other. A man who has been about twenty years in the service told me that he has always used the pin and he has only been caught once. He says that if men kept sober and on the watch they need have very little trouble. He is the oldest brakeman we have got. He always holds the link up with the pin, and after the link enters he drops in the pin. He does not use the other hand at all."

Mr. Broughton submitted a letter from Mr. CHARLES PAINE, at that time General Superintendent of the Lake Shore road, in which the latter gentleman explained the orders which had been issued on that line with reference to the use of a stick in coupling cars. Copies of these orders were also submitted. Mr. Paine said:

"Our account shows that for the first year after we began to enforce the order we lessened the number of injuries from coupling considerably, as follows:

Year.	Number injured. Slight.	Severe.	Fatal.	Total.
1878	75	23	2	100
1879	47	13	2	62

Mr. BROUGHTON continued:

"Another very important railway in the United States was asked, and we found that some of the division superintendents insisted on the use of the stick, others did not, and others thought it was useless altogether. When two couplers are of different heights, a man must hold the link up to allow it to go into the other coupler, and in doing so he gets his fingers nipped. With regard to falling off cars, last year on

the Great Western Railway we had none killed and only one injured in that way. The suggestion of a railing is, to my mind, perfect nonsense. Somebody has suggested a net; I suppose that would have to be connected in the middle, and if so, what a number of accidents would result from it. The space between the cars was ascertained to be last year on several different roads as follows:

Pennsylvania	43 in.
Great Western	32 to 34 "
Boston & Albany	31 to 33 "
Lake Shore	31 to 33 "
Michigan Central	31 to 33 "
New York Central	28 to 31 "

"This space is gradually being reduced by the extension of the running-board. It varies according to the road; if there are twenty loaded wagons behind the engine, the drawbrr will, of course, be stretched to its greatest length."

In the early part of their investigation the committee is sued a circular containing the following inquiries:

THE COMMITTEE'S CIRCULAR OF INQUIRY.

"(1). *What do you consider the best practicable remedy to prevent accidents happening in the coupling of cars?*

"(2). *Are there any automatic couplers which have been successfully used in freight cars? If so, name them.*

"(3). *What do you consider the best means to prevent accidents arising from railway frogs?*

"(4). *What changes in freight cars are practicable to render greater safety to brakemen when engaged in stopping trains?*

"(5). *What would be the effect of changes in the couplers, frogs and cars of Canadian railways whilst those of the United States roads remain as at present?*

"(6). *What other suggestions in the premises would you recommend to the committee?*"

In answer to the first question, the following is the substance of the replies received:

PREVENTION OF ACCIDENTS IN COUPLING CARS.

AGENT, Grand Trunk Railway.—"Have cars of a more uniform height. Difference in height of draw-bars the cause of many accidents."

W. J. TIFFIN.—"Have not seen any improvement in construction of couplings likely to be of practical benefit."

BRAKEMAN.—Make bunters same height. No accident ever occurs when this is the case, if the brakeman is ordinarily careful."

A CONDUCTOR and a STATION MASTER, Great Western Railway, both say: "Make the bunters of the same pattern and of uniform height."

A GRAND TRUNK RAILWAY BRAKEMAN.—"Experience has taught me that it would be safer to do away with the old-fashioned 'deadwood' or buffer, that it projects so far out, because they are the cause so many arms being broken and smashed, so that invariably amputation is necessary; besides it is likely to hold a man so tight that, if the cars were to move any, it would naturally drag him under the wheels and cause instant death."

CONDUCTOR, Great Western Railway.—"Use Wright's bunters, and make them of uniform height."

FOREMAN, Northern Railway.—"If the men would obey orders there would not be one quarter so many accidents as there are. A very safe thing would be when men are coupling, to have a piece of iron about 18 in. long, with a handle to it, and turned up at the end, to lift the end of the link."

CAR SUPERINTENDENT, Great Western Railway.—"Use a stick or light iron hook to guide the link, in place of doing it by hand."

AGENT, Grand Trunk Railway.—"Use automatic or self-couplers."

AGENT, Credit Valley Railway.—"Uniform height and uniform make of all car bunters and couplers."

AGENT, Great Western Railway.—"Sobriety and care on the part of those performing such duties."

A RAILWAY EMPLOYÉ.—"Use automatic couplers, or, if not, make the buffers and draw-bars of uniform pattern and height, and make the draw-bars with open lip and sides. Also make the dead-woods at least 8 or 10 in. thick, and, if practicable, place them underneath the draw-bar; also countersink all bolt-heads and nuts in the ends of cars, so as to come flush with outside of sheeting; also place a safety rod along the entire end of car, so that a man can easily lay hold of it while coupling or uncoupling."

B. P. COOKE, of Brockville, Ontario.—"Suspend from the ends of the cars suitable foot-boards or stirrups, and in connection therewith, fix convenient handles or arm straps higher up, by means of which the man can easily, with one hand, support himself firmly on the foot-board, or stirrup, while he adjusts the link and pin with the other."

AN OLD BRAKEMAN.—"The new standard draw-bar is the best, as it does away with dead-woods."

Mr. W. J. SPICER, Manager of the Grand Trunk Railway.—"Great carefulness on the part of the men is the only practical remedy to prevent accidents. We find it is not th new but the experienced men who most frequently meet with these accidents."

Mr. Spicer submitted the following instructions issued by himself to trainmen, shunters and couplers on the Grand Trunk Railway:

THE GRAND TRUNK'S INSTRUCTIONS TO TRAINMEN.

"We have had to record a large number of distressing casualties with freight-train brakemen, shunters and couplers, who have met with accidents in the discharge of their duty.

"It is feared that many of these unfortunate cases result from an almost reckless *disregard of danger* on the part of the men; it generally happens that the injured man has had a long experience in his work, and it would seem as if the experience begets *indifference to danger*, instead of constant *caution* and *carefulness* when moving about station yards, coupling cars, and on the top of freight trains.

"There is no doubt that you often place yourselves in positions of *unnecessary risk*, for instance, in running or walking along the track in front of moving cars and engines; in deliberately and recklessly standing on the track, and springing on to the approaching end of a shunting engine or moving car; in not keeping clear of the frogs in station yards, and in not remembering the locality of overhead bridges.

"The coupling gear of cars and engines is not *uniform*, either in style, height or condition.

"All employés are earnestly requested, before attempting to couple, or before stepping in between cars and engines, to carefully *examine* the coupling, dead-woods and loads. *Rails and lumber on platform cars sometimes shift, and extend beyond the ends of the cars. Look sharply to this before you attempt to make a coupling*, and in moving about station yards, look out for rail *frogs*.

"Work cautiously; and be careful for your own and others' safety.

"No reckless person can be retained in the company's service.

"I issue this order as a caution, in the hope that it will have the effect of making you realize the danger, and be more careful about your personal safety. There is at all times risk enough attending the proper discharge of your duty, but it is utter folly to trifle with danger, and to disregard the precautions which should be observed by every man in the performance of his work."

MR. HERBERT WALLIS, Mechanical Superintendent of the Grand Trunk Railway.—"The improved coupler that we think most highly of is the Safford draw-bar. It is very simple. The end of it is partly hollowed out so as to prevent men's fingers from being caught."

"B. A.," Northern Railway.—"The great majority of accidents to brakemen and yardmen are in coupling cars. There is one great fault in the links being not long enough. All brakemen have a dread of short links. These coupling links should be a uniform length—say 16 in."

STATION AGENT, Great Western Railway.—"Uniform dead-woods and draw-bars, such as are now used in the Great Western Railway, of which the 'Wright' draw-bar is the best."

TRAFFIC SUPERINTENDENT.—"Couplings can be made by using a stick."

GRAND TRUNK RAILWAY AGENT.—"Nothing short of an automatic or self-coupler will remove the danger."

AGENT, Credit Valley Railway.—"Good bumper castings or wood bumpers projecting about one foot, to be always in good repair."

Mr. EDMUND WRAGGE, General Manager, Toronto, Grey & Bruce Railway.—"The best remedy to prevent accidents happening in coupling freight cars is the use of a self-coupler, such as is in use on the Toronto, Grey & Bruce Railway. This, with proper dead-woods to keep the cars apart in case of accident to the draw-heads or draw-bar springs, is effective."

"W. S.," Agent.—"A draw-bar so constructed and fitted that it cannot be driven in so as to allow the cars to come together. Wright's patent comes the nearest to perfection in this respect, but might be improved by making the shoulders larger, and the opening in end for the link wider."

AUTOMATIC COUPLERS.

In reply to the second question, concerning automatic couplers, nearly all those who answered the circular say that they do not know of any that is satisfactory. A few recommend Wright's over Lapham's or Lappin's.

Mr. F. W. CUMBERLAND, Manager of the Northern road, says: "We like the Lapham coupler very much. We intend ultimately to fit up all our cars with it. We find no difficulty in using it with any cars that come on our line."

Another person recommended Boulton's, and a Grand Trunk Railway agent says: "Three different patterns of my own are unerring when the cars are of uniform height."

GETTING CAUGHT IN FROGS.

Of the answers to the third question, What do you consider the best means to prevent accidents arising from railway frogs? the following is a summary:

Mr. HOBSON, Chief Engineer of the Great Western Railway, explained that: "There is no objection to filling the 'V' portion of the frog, because the flanges of the wheel do not enter there at all. We have all these filled now. But there is still the danger of the wing rails and the guard rails, which cannot be filled without the risk of throwing the trains off the track as the flanges of the wheels enter them. We have some of our frogs at Clifton and Windsor filled near to the top, and we have found no benefit from them at all, because a man's foot can get caught firmly enough even in them to cause an accident. If a man is held for one moment, the car passes over him. Unless the spaces could be filled up flush with the top of the rail, the filling would be of no use."

Mr. E. P. HANNAFORD, Chief Engineer Grand Trunk Railway.—"Taking the question to mean 'What would be the best means of preventing accidents arising from the catching of men's boots between the frog rails,' I reply, by trainmen not wearing laced, buckled or buttoned boots, but using those out of which they can readily slip their feet; for instance, those so much in use, viz., elastic sides."

Mr. C. J. BRYDGES.—"There is no doubt that a piece of wood inserted in the frog would have the effect of diminishing the liability of accidents from this cause, but in winter any such contrivance is objectionable, as being likely to raise such an obstruction, when there is snow or ice, as might have the effect of interfering with the proper running of the cars over the frogs. I do not think the number of accidents from this cause is at all large."

Mr. WRAGGE.—"The only way to prevent accidents is to fill the frog with a wooden block or other material, and prevent trespassing on railways."

Twenty-one others, who answered the circular, recommended filling up the frogs with wood to prevent accidents at such places.

TO SECURE SAFETY WHILE BACKING.

To the fourth question, "*What changes in freight cars are practicable to render greater safety to brakemen when engaged in stopping trains?*" the following replies were made."

AGENT, Grand Trunk Railway.—"The majority of accidents occur by men falling between the cars while in the act of passing from one car to another. An iron railing, about 18 in. high, across the ends of each car, leaving a space of three feet in centre of car, would give men a chance to assist themselves across."

W. J. TIFFIN.—"A uniform running board of 24 in. in width, with end projection of 4 in. or 5 in., so as to lessen the gap between the cars when in motion, with brake and ratchet-wheel raised to roof of car, would lessen the danger."

STATION AGENT.—"An iron hand-rail fixed on one side of the foot-board would be a great safety in frosty weather."

BRAKEMAN.—Have a railing 3 ft. high along the side of the running-board, and this board ought to be made 3 ft. wide and extend over the end of the car as far as the dead-wood below does. The cog-wheel and dog should be on top of the car and not placed against the end."

CONDUCTOR.—"Railway companies should be compelled to keep the brakes in good order, thus necessitating the use of less brakes and consequently less travel on the top of the cars."

STATION MASTER.—"Keep brakes in good repair, using only three or four each instead of ten or twelve. Have them put on top the car instead of down on the end, and have the tops of cars sanded with coarse sand to keep men from slipping."

BRAKEMAN, Grand Trunk.—"Attach a hand-railing about 3 ft. above the car, allowing the ends to project over about 8 in., and to be on the opposite side from the brake and running-board."

CONDUCTOR, Great Western Railway.—"The running-board should not be less than 3 ft. wide, and should project over the end of the car about 7 in. A hand-rail not less than 3 ft. high, about 10 in. from the running-board, and to extend over the end of the car about 9 in. This railing would also hold the bell cord in its position."

FOREMAN, Northern Railway.—"Extend the running-board over the ends of the cars 8 or 9 in., and make it not less than 2 ft. wide. Men rarely fall off the sides of the cars; it almost always happens by slipping and falling between the cars. The great danger with flat cars is when loaded with lumber of such length that long couplers must be used, and the men then venture from one car to another. The safest and most reliable way is to have two vans in a train. Put the conductor's van in the back end of the train, the other van in the centre, and the brake on the tender will stop any train. Then if they require more brakes going down a steep incline, they can step out of either end of the van and put on brakes on the front or hind cars."

CAR SUPERINTENDENT, Great Western Railway.—"Make the foot-boards to project beyond the ends 6 or 8 in."

AGENT, Grand Trunk.—"Put a hand-rail 3 ft. high along the foot-board, and if an arm or joint was made to extend between the cars, the brakeman could catch the railing."

AGENT, Credit Valley Railway.—"Have wider ridge-boards and an iron railing around the tops of all cars."

AGENT, Great Western Railway.—"Have the roof extended over end of car 8 in., with brake most through extension and cog-wheel and hook in roof."

RAILWAY EMPLOYÉ.—"Make running-board at least 2 ft. 6 in. wide and of lumber strong enough to stand the constant wear. Extend the roof 10 or more inches over ends, and put a hand-rail along running-board."

OLD BRAKEMAN.—"Run a hand-rail 3 ft. high along running-board on the opposite side to the brake, and let it project 8 in. over the end of car."

Mr. WM. ROGERS.—"The ladders should be on the sides of cars. Then if a rung breaks the man on it has a chance; but if it is on the end falls between the cars. The loading should be done with two loaded brake vans. A railing along the side of car would be a great assistance to the men in icy weather. Have seen them take their boots off to keep from slipping. On a dark night a brakeman might trip on a rail if it was on the end of the car. Brakemen most frequently fall in stepping from one car to another. The running-boards should extend over the ends not more than 6 in. Don't see how men could couple with a stick."

Mr. W. J. SPICER, Manager Grand Trunk Railway.—"Last year had seven fatal cases of men falling off trains on our system of railway. The majority of them fell off the ends of the cars, not by slipping and falling over the side. Most of these accidents happen in the station yards, while the shunting is being done, not while the train is running between stations. The running-boards might be widened to 18 in. and extended over the ends of the cars a few inches as an additional means of safety. A railing, unless adopted by all companies, would be a trap rather than a safeguard. It would answer to have the ladder at the end as well as at the side, though I never thought of that before. The men need a ladder at the end to go from a low to a high car. The English system of braking with vans would be impracticable on our roads."

Mr. HERBERT WALLIS.—"Running-boards should be made 18 in. wide, but 2 ft. would be better; 3 ft. is too wide; they should extend beyond the ends of the cars as far as the dead-woods. The brake-wheels should be on the tops of the cars. The railing should not be along the running-board, but at the end of the car. A railing along the edge of the car, if generally adopted, would be a good thing. I am not satisfied that a railing would be welcomed by the brakemen themselves. They like to be free, so that in case of accident they can jump."

Mr. C. J. BRYDGES.—"I believe that the system of braking freight trains is completely unsatisfactory, and by no means efficient. A great many cases of accidents have come under my personal knowledge, which have arisen from the absence of brake power having been put on when called for by the whistle from the engine. These have occurred, in many cases, in bad weather, and when the tops of the cars have been slippery from ice—rendering it almost impossible for the men to get upon the tops of the cars and run along them to put on the brakes. Repeated cases have come under my knowledge when engine-drivers have reported that they have repeatedly whistled for brakes, and had no response, except from the brake put on in the van at the rear of the train.

"The brakes of many of the freight cars are not efficient, and affect to a very slight extent the retardation of the train. When a train is composed, as is very frequently the case, partly of box and partly of platform cars—the latter in many instances loaded with machinery—it is almost impossible for brakemen to get along the cars to apply the brake power.

"My own opinion is very strong that the true plan to adopt is to put upon every engine an air brake, the same as is done now with every engine on a passenger train. I would then require that every freight train should have at least two brake-vans—one in front next to the engine, which should be supplied with an air brake connected with the apparatus on the engine, so that when the driver applied the brake it would effect not only his engine and tender, but also the brake-van immediately on rear of the tender. These brake-vans ought to be constructed so as to be weighted sufficiently to make their braking power felt very strongly when the brakes were put on. A van should also be placed at the rear of the train and supplied with a powerful brake (much more powerful than the ones now in use). The brake in this van should be worked by the men on the train. If a train were more than 20 to 25 cars long, a van with a strong brake, and a man in it to work the brake, should be placed in the centre of the train.

"I am quite satisfied that this system, properly carried out, would be much more efficient for braking freight trains than the one now in existence. It would avoid the very inhuman system of sending men out on the tops of freight cars at night, and when it is almost impossible to retain their footing; and the results, I am sure, would be found to be far more satisfactory than the present mode. Of course every brake-van would have to be supplied with air-brakes, so that those placed in front of the train could be worked from the engine."

Mr. J. HICKSON, General Manager Grand Trunk Railway.—"I am satisfied that the only efficient method of doing away with the necessity which exists under the present system, for the men going out on the roofs of cars, is to perfect machinery by which brake power can be applied from the vans in rear and (or) in front of the cars in each train.

"The plan of placing a railing along the top or sides of the cars, and other somewhat similar methods which have been suggested, will all be found in practice to be only an aggravation of the present trouble."

"B. A.," Northern Railway.—"The running-boards should be 3 ft. 6 in. instead of only 10 or 12 in. wide."

STATION AGENT, Great Western Railway.—"A hand-railing might be of use, but old trainmen say it is quite uncalled for."

TRAFFIC SUPERINTENDENT.—"All overhead bridges should be raised high enough to clear a tall man on the top of the highest box-car. The running-board should be 2 ft. width, and should not project over the ends of the cars. I do not approve of a railing along each side of the cars; a railing along one side of the running-board might assist brakemen in passing along. Creepers might be of great advantage in slippery weather, but are objected to on account of injuring the roofs of the cars."

AGENT, Credit Valley Railroad.—"A small railing about 4 or 6 in. in height all around car extremity, except on foot-board, is, I think, the only practicable means."

ENGINE-DRIVER.—"All bridges should clear the top of any car 7 ft. Box cars should have a railing along the top, and an opening at each end for men to pass through, and the running-board should project at least 4 in."

Mr. EDMUND WRAGGE.—"Do not think it possible to make any advantageous changes in freight cars to enable

men to travel in safety over the top, so long as cars are of different levels."

"W. S."—"A good brake on each car, or, better still, one on each end of every car, and kept in good order, so that the two brakemen could each get at two good brakes without running along the top of a train, four good brakes being sufficient, with the caboose and tender brakes, to stop or hold any ordinary train under ordinary circumstances. The running-board to project 6 or 8 in. beyond the end of the cars, and an iron railing about 2 ft. high, placed a few inches from the running-board, with the rod projecting a foot or so beyond the end of the car."

CHANGES IN CANADA IMPRACTICABLE UNLESS MADE IN UNITED STATES ALSO.

To the fifth question of the committee, the substance of the reply is that changes in couplers and cars would be of no practical use while the cars of United States roads remain as at present, and that the blocking of frogs would not interfere with the running of any Canadian or foreign cars.

SUGGESTIONS.

In the way of suggestion in response to the sixth inquiry, the following may be quoted:

STATION AGENT, Great Western Railway.—"The majority of accidents happen to inexperienced hands; with sobriety, good judgment and some experience, to act upon, a brakeman runs no more risk of his life than a teamster, mechanic or laborer"

BRAKEMAN.—"I have been a sailor and a soldier, and have been a brakeman on railways in the old country, and I never knew what it was to be afraid of losing my life till I got on the top of a freight car going down Copetown grade, on a frosty night when the cars were covered with ice, and I had to take off my boots to get across them. Had there been a railing would I not have been able to do my duty better and with more safety to myself? He must be an inexperienced fool in railroading who would say that a railing should not be put on. It would be as advantageous to the railway companies as to the brakemen, because they could get the trains stopped in proper time and save chances of accident. In slippery weather most of the braking is done on the English method; that is, with the conductor's car and the engine, the engine-driver requiring to exercise the greatest caution, as it is often impossible for the brakeman to go over the cars. This accounts for freight and mixed trains being so often late in bad weather. Besides, the brakes are kept in such bad order that often in a whole train there will not be one brake that could stop a wheelbarrow. They use the screw brake in England, and one of such brakes is better than a dozen of ours with the chain.

"If we had a government inspector for railways we would have fewer accidents under our present method with all its faults."

STATION MASTER, Great Western Railway.—"Put the ladders on the sides of the cars instead of the ends, and the brakes on top."

CONDUCTOR, Great Western Railway.—"The English method of braking is the thing we require. I have seen more difficulty in stopping our trains with all the brakes we have got than I ever saw in England; this did not arise from the steepness of the grades, but from other causes, namely, in frosty weather the brakeman was unable to get quickly from one car to another on his hands and knees; also, the brakes being in bad repair, requiring the brakeman to crawl over perhaps ten or fifteen cars before he could get one brake to hold sufficiently. It is a lamentable fact that the rolling stock of railway companies is allowed to be kept in such bad repair that it is not only dangerous to the employés but to the traveling public. A government inspector is much needed, the same as in England. I have known many a useful man to get disabled for life from having to climb up a ladder on the sides of cars which gave way under him; these ladders are never inspected until they fall off by some brakeman breaking them down by his own weight. I knew one fine young man, about two years ago, and when he took hold of the mask (?) wheel this wheel fell off, owing to its being in such bad repair, and the man went with it between the cars, and was torn in pieces. Had there been an inspector to take up such a case as this, the companies would not be so neglectful.

"The ratchet-wheel should be placed on top of the cars and not on the end."

A RAILWAY EMPLOYE.—"The idea is very prevalen that a brakeman can, after a little experience and practice run along the tops of the train as easily as a person can on the ground or pavement. I may say, from my own experience, that such is not the case, and that the idea is simply absurd. It is true that after a little practice a man can get over a train with a certain degree of steadiness which can only be acquired by practice. I have frequently had to go almost the whole length of a train on my hands and knees, and hold on very firmly at that, to prevent myself from being blown off in windy weather, and have had to do the same thing in sleety weather.

"I would advocate the appointment of an inspector of railways and their rolling stock."

AGENT, Grand Trunk Railway.—"A large percentage of the accidents which have occurred during my experience of thirty years have been attributable to intoxicating drinks."

Mr. EDMUND WRAGGE.—"I believe the best way of meeting the difficulty is by means of either a simpleform of continuous brake or by the use of brake-vans—say one to every 12 or 15 cars, according to the grades upon which the trains are to be worked."

STATION AGENT, Great Western Railway.—"Have all accidents traced to their cause and have the committee supplied with the *Railroad Gazette*, of New York, for the years 1879 and 1880."

From this testimony the Committee reported as follows:

REPORT.

"The Committee beg leave to report that while the investigation was not so full and complete as they could have desired, they are of the opiuion that the evidence is of sufficient weight and force to warrant them in offering the following recommendations:

"(1). That all overhead bridges should be built so as to have a clear space of at least 7 ft. from the top of the highest freight car to the lowest member of the bridge above.

"(2). That the running-board upon freight cars should be as nearly flush with the roof of the car as possible, and not less than from 24 to 30 in. wide, and extend as far as the dead-wood of the cars will safely admit, so as to leave as little space as possible between the ends of the running-boards on each car, and also that a hand-rail should be placed along the side of the running-board to be not less than 30 in. in height.

"(3). That your committee examined a large number of automatic and other couplers for freight cars, some of which appeared well fitted for the purpose of coupling, and would go far to do away with the necessity of the men going so frequently between the cars.

"The committee would therefore suggest whether, in view of the great loss of life and injury to brakemen in coupling cars, it is not desirable that the adoption of automatic couplers should be made compulsory upon Canadian railway companies.

"(4). That all frogs and wing rails on railways should be filled in with wood, according to the system now in use on the Northern Railway.

"(5). That the letter of Mr. C. J. Brydges, as well as the statements of others, strongly favor the adoption of braking by means of vans as used upon English railways, but your committee were not able to obtain sufficient evidence to warrant them in expressing a decided opinion upon this point."

Southern Railway & Steamship Association.

In accordance with the call of the President, the Association met in Washington Oct. 26. Present: Hon. Joseph E. Brown, President; Virgil Powers, General Commissioner; Charles A. Sindall, Secretary, and the following representatives of members and others:

Atlanta & Charlotte Air Line, T. M. R. Talcott, General Manager; Sol. Haas, General Freight Agent.
Atlanta & West Point, Cecil Gabbett, General Manager.
Central Railroad & Banking Co., W. G. Raoul, Vice-President; G. A. Whitehead, General Freight Agent.
Charleston & Savannah, S. C. Boylston, General Freight Agent.
Charlotte, Columbia & Augusta, T. M. R. Talcott, General Manager; Sol. Haas, General Freight Agent; D. Cardwell, Assistant General Freight Agent.
Duck River Valley, George R. Knox, General Freight Agent.
Georgia Railroad & Banking Co., E. R. Dorsey, General Freight Agent.
Louisville & Nashville, J. M. Culp, General Freight Agent.
Macon & Brunswick, J. M. Edwards, Superintendent.
Marietta & North Georgia, Hon. Jos. E. Brown.
Mobile & Girard, W. G. Raoul.
Montgomery & Eufaula, W. G. Raoul, General Superintendent.
Nashville, Chattanooga & St. Louis, George R. Knox, General Freight Agent.
Nashville & Tuscaloosa, George R. Knox, General Freight Agent.
Northwestern North Carolina, T. M. R. Talcott, General Manager.
Raleigh & Augusta Air Line, E. G Geio.
Raleigh & Gaston, E. G. Geio.
Richmond & Danville, T. M R. Talcott, General Manoger; Sol. Haas, General Freight Agent; James H. Drake, Assistant General Freight Agent.
Richmond, York River & Chesapeake, T. M. R. Talcott, General Manager.
Rome Railroad Co., E. Hillyer, President.
Savannah, Florida & Western, H. S. Haines, General Manager; J. B. Andrews, General Agent, Baltimore.
Savannah, Griffin & North Alabama, W. G. Raoul.
Seaboard & Roanoke, E. G. Ghio, Superintendent.
South Carolina Railroad Co., John B. Peck, General Superintendent.
South & North Alabama, J. M. Culp, General Freight Agent.
Tennssee & Pacific, George R. Knox, General Freight Agent.
Western Railroad of Alabama, Cecil Gabbett, General Manager.
Western & Atlantic, Hon. Joseph E. Brown, President; R. A. Anderson, General Freight Agent.
Wilmington, Columbia & Augusta, Hon. R. R. Bridgers, President; S. P. Collier, Assistant General Freight Agent.
Wilmington & Weldon, Hon. R. R. Bridgers, President S. P. Collier, Assistant General Freight Agent.
Baltimore & Savannah Steamship Co., William Plummer, Assistant to President.
Baltimore, Chesapeake & Richmond Steamboat Co., T. M. R. Talcott; George F. Needham, General Freight Agent.
Baltimore Steam Packet Co., E. G. Ghio.
Boston, Baltimore & Norfolk Steamship Co., Wm. Plummer, Assistant to President.
Boston & Charleston Steamship Co., George W. Quintard, President.
Merchants' Steamship Co., E. Fitzgerald, General Agent.
New York & Charleston Steamship Co., George W. Quintard, President; B. D. Hasell, General Agent.
New York & South Carolina Steamship Co., T. G. Eger, General Freight Agent.
New York & Wilmington Steamship Co., T. G. Eger, General Freight Agent.
Ocean Steamship Co.'s New York & Savannah Line, W. G. Raoul.
Ocean Steamship Co.'s Philadelphia & Savannah Line, W. G. Raoul.
Old Dominion Steamship Co.'s New York, Norfolk & Richmond Line, W. H. Stanford, Secretary and General Freight Agent.
Old Dominion Steamship Co.'s New York & West Point Line, W. H. Stanford, Secretary and General Freight Agent.
Philadelphia & Charleston Steamship Co., D. D. C. Mink, General Freight Agent.
Philadelphia, Norfolk & Richmond Steamship Co., J. W. McCarrick, General Agent.
Providence & West Point Steamship Co., Wm. Plummer, Assistant to President.

There were present, as above, representatives of 46 out of 53 companies, members of the Association. There were also present the following:

E. P. Wilson, General Freight Agent, and W. C. Thompson, for Cincinnati Southern Railway.
Charles P. Hatch, General Freight Agent, for Shenandoah Valley Railroad Company.
W. J. Young, General Agent for Illinois Central Railroad Company.
L. D. Richardson, General Agent, Chicago, of Green Line.
J. R. Ogden, General Freight Agent, for East Tennessee, Virginia & Georgia.
T. E. Walker, Claim Agent Green Line.
Jas. Hollingshead, Baltimore Agent Associated Lines of Virginia and the Carolinas.
T. W. Gough, Baltimore Agent Great Southern Freight Line *via* Savannah.
O. V. Smith, Forwarding Agent, Portsmouth, Atlantic Coast Line.
Thomas H. Carter, of the Board of Arbitration of the Association.
H. N. Starnes, Secretary to the Board of Arbitration.
Milo S. Freeman, Clearing House Agent of the Association.
E. T. Hughes, General Agent, New York, of the Association.

After the call of the roll and a record made of the representatives, the annual report of the General Commissioner was read by the Secretary.

Mr. Haas moved that a committee of five from each the Green Line and the steamship interests be appointed by the President to confer on Coast differences and rates, referred to in the General Commissioner's Report. Carried.

The President appointed Messrs. Raoul, Plummer, Hasell, Fitzgerald and Eger for Steamships, and Messrs. Knox, Anderson, Wilson, Culp and Dorsey for the Green Line, as that committee.

Mr. Raoul moved that the General Commissioner be added as Chairman. Carried.

Mr. Mink, Vice-President of the Coastwise Steamship Association, addressed the Convention upon the necessity for a uniform form of bills of lading, and gave the results of the work of a committee of the Coastwise Steamship Association for two years past, and stated that the bill of lading as made by that committee had been adopted, and was now used by all steamship lines on South-bound business. He urged action by the Convention as to the adoption of a like form for cotton and North-bound business, and stated that a committee from the Coastwise Steamship Association was present, and would like to meet a committee from this Association.

The following, offered by Mr. Peck, was adopted:

"It being the opinion of some of the members of this Association that it is desirable to have uniformity in through bills of lading from interior Southern to Eastern, Western and Northern points, it is—

"*Resolved*, That a committee of five be appointed to confer with a committee of the Coastwise Steamship Association, who have already performed a similar service for that Association on South-bound bills of lading, and that the committee appointed hereunder be directed to submit, as soon as practicable, to this Association for its consideration, a form of through bill of lading for use from interior points."

The President appointed Messrs. Peck, Raoul, Bridgers, Gabbett and Knox as the committee under the foregoing resolution.

After recess had been taken:

The Committee on Coast Differences and Rates not being ready to report, was given more time.

The Committee upon the subject of Uniform Bills of Lading reported as follows:

"The committee appointed to confer with a committee of the Coastwise Association relative to bills of lading, respectfully report that they have had under consideration the subject of an uniform form of bills of lading to be used by all companies belonging to or working with the Association.

"The committee are of the opinion that the interest of all the companies composing this Association imperatively demands the adoption of some form which shall insure to them all the exemption from liability which the laws of the several states or the United States grant to carriers.

"The importance of the subject, however, demands more consideration than can be given to it during the present session of the Association.

"The committee therefore beg leave to recommend that the whole subject be referred to the Rate Committee, with instructions to submit to each of the companies composing the Association such form or forms as may be adopted by the Rate Committee, and upon the approval of a majority of the companies composing the Association, such form or forms shall be deemed and held to be the authorized forms of bills of lading of this Association, and upon the publication of the same by the General Commissioner all companies belonging to the Association shall be held bound to use only such forms for all shipments made by them where the service is to be performed by more than one company, after a date to be fixed by the Rate Committee."

Mr. Plummer moved the report be adopted. Carried.

Mr. Henry Fink, General Manager of the Virginia, Tennessee & Georgia Air Line, presented a communication claiming that the 10½ per cent. of Atlanta cotton allotted to the Western & Atlantic Railroad belonged to the Virginia & Tennessee Air Line Railroad, which was read by the Secretary.

Mr. Haas moved the communication be received. Carried.

The General Commissioner made the statement that his action in dividing the 10½ per cent. on the basis of the business done, was in accordance with the rules of the Association and by direction of the President of the Western & Atlantic, which road, under the rules of the Association, had the right to so direct. The General Commissioner suggested that the matter be settled by prorating the amounts carried by the Cincinnati Southern Railway, less 20 per cent. for carriage, or by first deducting from the movement of cotton from Atlanta that which is taken by the Cincinnati Southern and other Western lines, and dividing the balances as per division of Atlanta cotton.

Mr. Talcott moved that the settlement for the past season be made by first deducting from the movement the amount carried via the Cincinnati Southern Railway and dividing the balance as per Atlanta cotton divisions. Carried.

Mr. Henry Fink requested the appointment of a committee, or the authorization of the General Commissioner to make a new agreement for a year from Sept. 1, 1881.

Mr. Raoul moved the appointment of a committee of three to confer with Mr. Fink, as requested. Carried.

The President appointed Messrs. Raoul, Talcott and Anderson as that committee.

The old officers (Joseph E. Brown, President; Virgil Powers, General Commissioner; C. A. Sindall, Secretary); were then re-elected for the ensuing year, and committees appointed to choose names for the Rate Committee, and to report on the continuance of the Board of Arbitration.

SECOND DAY'S PROCEEDINGS.

After the opening of the session on the second day, the report of the Committee on Coast Differences and Rates was read as follows:

"The Committee appointed on Coast Differences and Rates, beg leave to report that they have agreed on basis of differences as follows:

"All-rail lines to maintain to coast not less than 8 cents per 100 pounds higher rates on lettered classes than Eastern lines from Chicago. The total rates to coast to be made by combination of trunk-line rates, Chicago to Baltimore, plus 12 cents per 100 pounds, as steamer rates, Baltimore to Charleston and Savannah, said totals to be Eastern lines rates. All-rail lines totals to be not less than 8 cents per 100 pounds higher. The above not to include Ohio River points (viz: Cincinnati, Louisville, Aurora, Madison, Jeffersonville, Evansville, Cairo, East Cairo, Henderson, Columbus and Hickman), which are yielded to all-rail lines.

"It is also a condition of this agreement that no line is to work into South Atlantic ports, except via Baltimore, Philadelphia, New York or Boston, and thence all water, unless they give to the water lines via Baltimore, Philadelphia, New York or Boston the same differences in favor of the water lines as is given them by all-rail lines, viz.: 8 cents per 100 pounds on lettered classes.

"This basis to be worked by all lines for a period of at least six months.

"The Committee further recommend that the parties in interest make an agreement, and report to the General Commissioner in reference to rates and differences on rice and naval stores."

This report was laid on the table, but afterward taken up and referred to the Rate Committee.

The Report of the Committee upon Rate Committee received and read as follows:

"We respectfully beg leave to report that your committee unanimously adopted the following resolutions, and recommended that they be adopted by the Association:

"*Resolved*, That the Rate Committee shall consist of the

General Commissioner, who shall be Chairman, with the right to vote whenever there is a tie, and eight members to be selected as follows: One member to be nominated by each of the following interests, viz: The Western & Atlantic Railroad Company; The Louisville & Nashville Railroad Company; the Cincinnati Southern Railway Company; the Central Railroad & Banking Company; the South Carolina Railroad Company; the Virginia, Tennessee & Georgia Air Line; the Richmond & Danville Railroad Company; the Coastwise Steamship Association.

"*Resolved*, That any member of the Association, or any company working with the Association, shall have the right to appeal from decisions of the Rate Committee to the Board of Arbitration."

Mr. Raoul moved to amend the report by adding the following resolution:

"*Resolved*, That the rates as made by the Rate Committee shall be enforced pending any appeal to the Board of Arbitration." Carried.

On motion, the report, as amended, was adopted.

The report of the Committee on Board of Arbitration was read as follows:

"Your committee respectfully recommend that the Board of Arbitration of the Association be paid by the Association a fixed salary of $500 each per annum, and $200 each, and expenses, for each case they are called upon to arbitrate. Said $200 each and expenses to be paid by the General Commissioner, and charged to the roads interested in the arbitration.

"They further recommend that the Clerk to the Board of Arbitration be discontinued, and that the Secretary of the Association act as Secretary of the Board."

After some discussion it was resolved to continue the salaries of the members of the Board of Arbitration at $2,000 per year each, as at present; also that the Secretary of the Association act as Secretary of the Board of Arbitration, his salary being increased to $3,000 per year. The salary of the Clearing House Agent was fixed at $2,400 per year.

The old Board of Arbitration (Messrs. John Screven, T. H. Carter and W. R. Arthur) were unanimously re-elected.

The following, offered by Mr. Raoul, was adopted:

"*Resolved*, That all business between competitive or pooled points on through bills of lading, whether by sail or otherwise, be reported to the General Commissioner and included in his pool divisions."

Mr. Dorsey moved the reappointment for the ensuing year of the present Committee on Accounts, Finance, Organization and Rules: Messrs. Buford, Peck, Raoul, Stanford and Grant. The motion was carried unanimously.

The appointment of a Rate Committee, as per report adopted, being called for, the Western & Atlantic Railroad named R. A. Anderson; the Central Railroad named G. A. Whitehead; the Virginia, Tennessee & Georgia Air Line named J. R. Ogden, and the Richmond & Danville Railroad named Sol. Haas.

The other parties named for the present, or until action by the boards of directors, etc., and notice to Secretary of the Association, are as follows:

The Louisville & Nashville Railroad named George R. Knox, the Cincinnati Southern Railway named E. P. Wilson, the South Carolina Railroad named J. B. Peck, and the Coastwise Steamship Association named W. H. Stanford.

On motion of Mr. Raoul, the roll of members was called upon the question of renewal of agreement and continuance of membership for the year 1882, and resulted in affirmative replies from all present (46 members) except the New York & Wilmington Steamship Company, the right being reserved to each of submitting the same to the boards of directors for approval.

Mr. Raoul moved that the Chairman of the Rate Committee (General Commissioner) be requested to notify the members of the Association of the meetings of the Rate Committee. Carried.

Mr. Eger moved that the proceedings of the Rate Committee meetings be sent, as issued, to each member of the Association. Carried.

Mr. Talcott moved the appointment of a committee of three to look into and report any amendments necessary in the methods of pooling business. Carried.

The President appointed Messrs. Talcott, Raoul and Peck as that committee.

After a recess had been taken:

The Committee of Conference appointed to confer with Mr. Henry Fink, of the Virginia, Tennessee & Georgia Air Line submitted a report as follows:

"Your committee beg leave to report that we have met Mr. Henry Fink, representative of the Virginia, Tennessee & Georgia Air Line, in relation to effecting a new agreement between that line and the Association for the ensuing year.

"We recommend that the Western & Atlantic Railroad and the Virginia, Tennessee & Georgia Air Line be allowed the same percentages of business which were accorded them the past year, namely, 15 per cent. on merchandise South, and 10½ per cent. of the revenue on the cotton business out of Atlanta, based on the average rate on cotton to all points, and calculated so as to give to the Virginia, Tennessee & Georgia Air Line and the Western & Atlantic Railroad what they would have gotten had they received the business and their *pro rata* portion of the rate, the Western & Atlantic Railroad charging locals on all cotton business out of Atlanta and turning the whole revenue into the pool, less 20 per cent. for carriage, the Virginia, Tennessee & Georgia Air Line reporting their revenue to the pool less 20 per cent. for cost of carriage, as is usual.

"The Committee takes it for granted that all the Western roads will continue to do cheerfully as has heretofore been agreed, to abstain from competing with the Eastern lines in their Eastern business.

"The Virginia, Tennessee & Georgia Air Line insist that they cannot and will not attempt to maintain a higher rate at Rome than is maintained at Montgomery and Selma, and the Committee, in view of the fact that all lines leading out of Montgomery are under the jurisdiction of the Association, except the Selma, Rome & Dalton Railroad, at Selma, which is under the management of Mr. Fink, who pledges himself to maintain as high rates to New England towns as the rates maintained by the Louisville & Nashville Railroad, less agreed water differences, recommend that the rates out of Selma and Montgomery to New England towns be made by the Rate Committee, and enforced by the Association, and that the Rate Committee be instructed to act at once, and make and restore said rates.

"It is the opinion, however, that rates out of Montgomery and Selma cannot be maintained except by pooling the business, and we therefore recommend that a bale pool be entered into at once. We suggest a bale pool because the different lengths of the lines out of these places that can be put into the pool would make a revenue division unequal.

"We suggest that the stability of rates at Montgomery and Selma is of so much importance to all the lines in the Association that whatever is necessary to be done to accomplish such a result should be done. Therefore, if all other means fail, we suggest that the whole question be submitted to the Board of Arbitration, including the question of whether or not these points should be pooled. It may be claimed that this question is only of interest to the lines directly concerned, but we respectfully submit that if the rates at Montgomery fix the rates at Selma, and Selma those of Rome, and Rome those of Atlanta, and Atlanta those of Macon, and so on, it is a question of vital importance to every member, and one on which the Association should act if it is to be of any real service to its members."

Mr. Plummer moved the adoption of the report. Carried.

Mr. Quintard moved that the thanks of the Convention be voted to the proprietor of the Metropolitan Hotel for courtesies extended. Carried unanimously.

Mr. Quintard moved that the Convention do now adjourn. Carried.

Adjourned.

The First Railroads of Massachusetts.

The annual report of the Boston & Providence Company, recalling the fact that this year completes a period of half a century since the company was chartered, reprints the following extract from a history of the railroads of Massachusetts, written by Hon. Edward Appleton, one of the first Railroad Commissioners of the state, and published with Walling & Gray's *Topographical Atlas:*

The first railroad charter granted in Massachusetts was that of the Granite Railway Company, March 4, 1826. This company was chartered for the purpose of transporting granite from the quarries in Quincy to tidewater in Neponset River. The road was built and put in operation the next year.

In 1827 and 1828 sundry surveys for canals and railroads were authorized by the Legislature, and reports concerning them were made in 1828 and 1829. The Commissioners having charge of these surveys proposed to have the tracks supported by stone walls, capped with granite stringers, with iron bars bolted to them, and to have the roads operated by horse-power. On the road to Providence they estimated that a single horse could draw a load of eight tons, including weight of carriage, at the rate of three miles per hour working seven hours per day, or, working three hours per day, could draw a carriage with 25 passengers nine miles per hour. They estimated the cost of this road at $8,000 per mile, besides the land, and that the freight would be about 27,000 tons per year, and the passengers about 24,000 and the net income $60,000.

Several railroad charters were granted in 1829 and 1830, but the only one of these under which an organization was formed was that of the Boston & Lowell, passed June 5, 1830. The charter of the Boston & Providence was granted June 22, 1831, and that of the Boston & Worcester June 23, 1831, with several others about the same time, which were never used. These three, the Lowell, the Providence and the Worcester were the pioneer railroads of the state. The construction of all of them was commenced about the same time in 1832, and they were all completed in 1835. The Worcester road was opened to Newton, April 18, 1834, starting from a temporary station at Washington street, in Boston, and was opened to Worcester in July, 1835. The Lowell road was opened to Lowell June 25, 1835. The Providence road was opened to Readville, June 4, 1834, and to Providence in August, 1835, the stone viaduct in Canton being the last piece of work to be finished.

The early charters for railroads were framed on the supposition that they would be used like turnpikes; and provided that any one might enter upon them with his own engines and cars, by paying tolls. Availing themselves of this provision, certain parties, in 1837, organized themselves under a charter for the Seekonk Branch, proposing to build about a quarter of a mile of road at the Providence end, and a separate station in Boston, and to use the whole intermediate part of the Boston & Providence road with their own engines and cars. For about three years the operations of these parties were a serious annoyance to the Boston & Providence Railroad Company; but the matter was then settled by the purchase of the property of the intruding corporation, and the passage of a law by the Legislature forbidding one railroad corporation to enter with its engines upon the road of another company, unless by their consent.

Of course, at this early date, both the construction and management of railroads were experiments, and everything was to be learned from actual practice. The first locomotives weighed only eight or ten tons each, and the earliest cars resembled two or three stage-bodies set together on a platform. At the present day, such engines and cars would not be supposed to be intended for use on a railroad. It was also supposed that nothing would answer for fuel but pitch pine, and some of our railroad companies purchased extensive tracts of woodland in Virginia and other Southern states, to keep themselves supplied with fuel. It did not take many years, however, to explode this idea, and to show that the wood along our own railroads would make steam just as well as that brought from a distance. Some of the early reports, in the light of later days, afford amusing reading. Thus, the directors of the Worcester road, in their report for 1838, state very complacently that their trains have run regularly during the whole year, and only eight trips have occupied more than four hours. On many of the roads the rails first laid were too light, and heavier ones were soon substituted. Still, the business as it was developed upon the roads considerably exceeded the original estimates, and though the expenses of doing the business over-ran the original estimates in still greater ratio, yet the net result of the first few years was so encouraging that the construction of railroads was rapidly extended.

THE SCRAP HEAP.

Locomotive Building.

The Rogers Locomotive Works, at Paterson, N. J., recently delivered some mogul freight engines to the Northern Pacific road. They have fire-boxes adapted to burn the lignite found on the line of that road in Dakota.

The Chicago, Milwaukee & St. Paul has contracts out for 30 new ten-wheeled freight engines.

The Shaw double-cylinder locomotive, which has been on the Boston & Providence road, has been taken to the Camden & Atlantic road, where it is to have an extended trial. Its first trip was made on Saturday of last week.

Fleming & Sons, at St. John, N. B., recently delivered two new passenger engines to the Intercolonial Railway.

Car Notes.

Some very heavy orders for cars have recently been given for the Vanderbilt roads. These include 2,080 for the New York Central & Hudson River, as follows: 400 box cars 34 ft. long, to go into the Blue Line; 1,030 box cars 29 ft. long, of which 300 are for the Blue Line, 230 for the White Line, 250 for the Midland Line and 250 for general use on the road; 250 four-wheel box cars for local traffic; 300 rack lumber cars, 34 ft. long and 100 double-deck stock cars, 34 ft. long. The Lake Shore & Michigan Southern order is for 1,300 cars, 1,050 to be box cars 34 ft. long, and 250 box cars 29 ft. long, 170 of the latter being for the White Line and 80 for the Red Line. These 3,380 cars will be divided between the Harrisburg Car Co., at Harrisburg, Pa., and the Jackson & Woodin Manufacturing Co., at Berwick, Pa. A further order has been agreed on for 300 refrigerator and 2,000 box cars for the Merchants' Dispatch. Orders have been given that these cars—and all others to be built hereafter for the Vanderbilt roads—shall be made to the New York Central standard drawings and specifications.

The Continuous Draw-Bar Co., of Philadelphia, has bought the Salvator draw-bar, and now owns the two Middleton patents and the Hoit, Caum and Griffith & Patterson patents, having thus, as it claims, control of all the legitimate continuous draw-bar patents in the United States.

The Bradley car shops at Worcester, Mass., have lately completed several passenger and baggage cars for the Danville, Olney & Ohio River road.

The Lehigh Valley car shops at Packerton, Pa., have nearly completed a very convenient and handsomely fitted car for the Paymaster of the road.

The Harrisburg Car Works at Harrisburg, Pa., have orders for over 1,000 cars to fill, and are about closing another heavy contract.

It is proposed to build extensive car shops in Louisville, Ky., or its neighborhood.

The Indianapolis Car Works have taken a contract to build 200 hopper-bottom coal cars for the Terre Haute & Indianapolis road.

The Pittsburgh Car Wheel Manufacturing Co. in Pittsburgh, Pa., has built a large addition to its works, and has begun to build freight cars.

The Maine Central Co. is fitting up some experimental cars with self-feeding oil stoves, for the transportation of potatoes, which are largely shipped over its line, and must be kept from freezing.

Pardee, Snyder & Co. have their car shops at Watsontown, Pa., full of work on contracts.

Bridge Notes.

The Delaware Bridge Co., of New York, has the contract for the bridge over the Delaware River on the extension of the New York, Susquehanna & Western road.

The Penn Bridge Works at Beaver Falls, Pa., are very busy, with a number of orders on hand, including some for South America.

The Boston Bridge Co. has the contract for a new iron bridge near Greenfield, Mass., on the Connecticut River road.

The Clinton Bridge Co. at Clinton, Ia., has a number of contracts on hand and is very busy.

Iron and Manufacturing Notes.

The Betts Machine Co., in Wilmington, Del., has just completed a large planer, capable of planing a piece of iron or other metal 10 ft. wide, 10 ft. high and 24 ft. long, and so arranged that four cutting tools may operate on the work at one time—two of these are on the crosshead, and one on each upright. The bedplate is a massive casting, 6 ft. wide and nearly 40 ft. long, weighing nearly 40,000 pounds; each upright weighs about 10,000 pounds, and the total weight of the tool is 120,000 pounds. It is built on order for one of the large engineering works in the West, Morgan, Williams & Co., of Alliance, O., and is the eighth machine that will plane 10 ft. square, that has gone out from these works, though they are not all so long as this one.

Pine Grove Furnace, in Greenup County, Ky., was recently completed and went into blast. It is a charcoal furnace, 17 ft. high and 6 ft. bosh, and is blown by one 2½-in. tuyere. It is said to be the smallest furnace in the United States, and was built by Mr. Joseph Spriggs to prove that a small furnace can be economically worked.

The property of the Aurora Iron & Nail Co. at Aurora, Ind., was recently sold at sheriff's sale and bought by Cobb's Iron & Nail Co. The works make bar, sheet and plate iron, nails, fish-plates and bolts.

Topton Furnace, at Topton, Pa., recently made 237 tons of pig iron in a week.

The Davidson Steam Pump Co., of Brooklyn, N. Y., has two pumps (one working at a time) running the elevator at the new freight house of the Pennsylvania Railroad at Sixteenth and Market streets, Philadelphia. Each pump working lifts 100 car-loads of miscellaneous freight daily, the pressure being directly on the rams, without any accumulator, and, it is said, without any perceptible shock, jar or unsteadiness of motion. The manufacturers claim that this result is unprecedented.

The Union Foundry & Hydraulic Works of I. S. Cassin & Co., Philadelphia, are filling some large orders for railroad castings and for hydrants, valves, etc., for railroad use.

The Union Switch & Signal Co. in Pittsburgh is now putting up block signals on the Pennsylvania road between Pittsburgh and Wall and between Tyrone and Spruce Creek; also putting up block signals on the Providence & Worcester road, and electric bells and signals at the highway crossings on the same road. The company has closed a contract to replace the signals now in use on the Old Colony road with its rail system. The company is also making for the Pennsylvania Railroad in Philadelphia seven Saxby & Farmer interlocking machines, one of which at Seventeenth street, on the Filbert Street Extension, has 56 levers, which move 27 switches, 30 signals and 20 locks. The automatic system of block signaling used by this company consists in the use of the rails of the track for conducting the electric current which operates the signal. The signals are connected with the track in such a manner that they will show danger when a train or part of a train is on one section, or when a switch is unlocked or misplaced, and also prevents the throwing of a switch in the face of a train, which, on entering a section, automatically locks the switch ahead of it.

The Rail Market.

Some large transactions in steel rail are reported, at prices not made public. Quotations continue at $60 to $62.50 per ton at mill, according to time of delivery. English rails are quoted at $60 to $62.50 at Eastern ports; several sales of light rails are reported at $66 to $70, delivered at Galveston.

Iron rails are quoted at $47.50 to $48 per ton at mill for 56-lb. rails and over, and $50 to $52.50 for light sections. There is a good deal of inquiry, but makers are not willing to concede anything, as they are generally supplied with orders.

Spikes continue at $3.15 per 100 lbs., with an upward tendency; fish-plates, $2.60, and track-bolts, $3.25 to $4 per 100 lbs.

Old iron rails are dull, with few sales reported. Holders are asking $29 to $29.50 per ton in Philadelphia for tees and $32 for double-heads, but buyers are not able to pay these prices at present quotations for new rails.

Steel blooms are quiet and irregular. A few sales are reported at $45 to $46 at tidewater, duty paid.

Prices of Scrap Iron.

Pittsburgh quotations for scrap iron and steel are: No. 1 wrought scrap, $29 to $30 per net ton; selected railroad scrap, $31, net; old car axles and springs, $37 to $40, net; steel rail ends, $28 to $30 per gross ton; old car wheels, $28 to $30, gross; cast borings, $15 to $16, gross; wrought turnings, $20 to $22, net. The market is reported firm.

Engineering Papers.

The Institution of Civil Engineers invites competition for the various premiums which it distributes annually for papers on subjects enumerated in a list of 45, from which we select the following most interesting to railroad men and Americans:

The methods of protecting metal work exposed to corrosion, with examples.

The modern practice of bridge-building in Germany, especially with reference to the details of construction and the substitution of bar and angle iron for wide flange plates.

The actions of high winds on lofty and exposed structures, and the best methods of determining the force of the wind.

The comparative cost of transport by land and by water.

The locations and construction of the most difficult portion of the several Pacific railroads.

The elevated street railroads of New York.

Continuous railway brakes.

Mechanical power on tramways, including steam, compressed air, electricity, etc.

The best methods of testing steam engines (independent of their boilers), having regard to accuracy of the results, and ease with which the tests can be carried out.

The modern practice in the design and construction of boilers.

The different systems of refrigerating machinery and appliances for the preservation and transport of provisions.

The application of hydraulic power to machine tools.

Drilling and riveting machinery for girder work.

The special construction of vessels for the reception of railway trains on deck, indicating the arrangements for the shipping of such trains on their own wheels at various states of the tide.

Instruments for measuring the velocities of vehicles, of prime movers and of wind and water meters.

All persons may compete for the premiums, whether members of the Institution or not, British or foreigners.

The Man at the Junction.

The other day six railway passengers over a line in this state were put down at a junction to wait for a cross-line train. The little depot was the only building in sight, and the man in charge of it was not a telegraph operator. He simply kept the station-house and flagged the trains, and he was no more responsible for the running of trains than the Tycoon of Japan. Every one of the six realized this, and yet it wasn't over two minutes before one of the passengers approached him and asked:

"Is that train on time?"

"I guess so."

"You guess so! Don't you know?"

"No, sir."

"You don't, eh? Then how do you know it isn't an hour late?"

"I don't."

"Don't, eh? Well, if that train's late, you'll ——"

Here he was elbowed away by the old woman who made up the six, and who wanted to know:

"Will I git home to-day?"

"I guess so."

"The train stops here, does it?"

"Yes'm."

"Stops long enough for me to git on?"

"Oh, yes."

"Well, mebbe it does, but if it don't you'll hear from us!"

She gave place to a man who had looked at his watch three times in six minutes, and who sternly asked:

"Did I understand that we were to wait here two hours?"

"Yes, sir."

"Is it two hours before that train crosses here?"

"Yes, sir."

"Whereabouts on the line is the train now?"

"I don't know."

"Why don't you telegraph?"

"We have no instrument here."

"Haven't, eh? That's a pretty state of affairs! Two long hours, and perhaps four! Now then if——"

Here he was called away by the blowing of a saw-mill whistle, and the most peaceful-looking man in the crowd edged up and inquired:

"Train on time?"

"Yes, sir."

"Does it cross here?"

"Yes, sir."

"Always stop?"

"Always."

"If I get left here to-night it would cost somebody a good round sum."

In the course of the next ten minutes the other two men approached and indulged in about the same style of conversation, and after an interval of ten minutes he was asked what time it was, why he was not an operator, why the trains didn't make close connection, and why on earth he didn't have an eating-house in connection with the station. He had a civil answer for every question, and his patience never wavered until just four minutes before train time. Then the old woman said to him for the twentieth time:

"Do you 'spose I'll miss the train?"

"I hope not," he quietly replied, "for if you do I shall take to the woods!"

And at that the six passengers gathered on the end of the platform, went into convention, and it was unanimously

"*Resolved*, that the arrogance and impudence of public servants must be and is hereby sternly rebuked."—*Detroit Free Press.*

She Knew It.

As the Pacific express train coming east on the Central road reached Ann Arbor the other day, there were many to get off and on, and there was the usual hurry and confusion. Among those getting aboard was a little old woman about sixty years old, who secured the assistance of a brakeman and drew herself up the step of the smoking car.

"This way, madam—this way," called the official, as she laid her hand on the door of the smoking car; but as she paid no attention to him he continued:

"Hold on, Madam—that's the smoking car."

"Wall, don't you 'spose I've traveled enough to know that?" she queried, as she whirled around. "I guess I know where to go when I want to smoke!"

And she entered and sat down, filled her old clay pipe, borrowed a light, and was soon puffing away in the greatest contentment.—*Detroit Free Press.*

A Handsome Pay Car.

A pay car is in course of construction at the Lehigh Valley Railroad Company's shops at Packerton, and when finished will be the most complete thing of the kind in the state. The car is of the usual length, width and height of an ordinary baggage car, and will be divided into four apartments—a cash, sleeping, cook room and observation room. In the cash or pay room will be placed sofas, tables, chairs and a Herring safe. The sleeping room will contain four berths. The cook room will be supplied with a cook stove and a patent Baker heater, a closet for dishes and one for linen. The observation room will be furnished with easy chairs and lounges. The interior of the car will be finished in black walnut and maple and neatly carpeted, and when completed will be a small railroad palace. The Paymaster and his crew will sleep and live on the car during the few days required to pay the men employed on all the branches of the road. The car will be completed for the use of the Paymaster in time to make the January pay.—*Pottsville (Pa.) Miners' Journal.*

LOCOMOTIVE RETURNS, JULY, 1881.

Master Mechanics of all American railroads are invited to send us their monthly returns for this table.

NAME OF ROAD.	Miles operated	Locomotives in service	Mileage. Total	Mileage. Average per engine	Miles Run To. Ton of coal	Miles Run To. Cord of wood	Miles Run To. Pint of oil	Average Train. Passenger cars	Average Train. Loaded freight cars	Cost in Cents per. Passenger car mile	Cost in Cents per. Freight car mile	Cost per Mile in Cents for. Repairs	Fuel	Stores	Miscellaneous	Engineers, firemen and wipers	Total	Average Cost of. Coal, per ton	Wood, per cord
																		$	$
Allegheny Valley, River Div.*	139	39	92,292	2,366	37.15	.....	21.66	3.20	21.60	5.917	0.753	7.24	3.67	0.50	.....	6.42	17.83	.....	.....
Low Grade Div.*	120	20	42,329	2,116	34.40	.....	19.70	2.80	22.10	2.893	0.683	1.90	3.52	0.71	.....	6.56	12.69	.....	.....
Central Pacific, Western Div.†	200	27	83,785	3,103	55.54	.....	18.39	.....	.....	.....	.....	4.12	12.43	0.48	0.34	7.32	24.69	7.10	5.00
Northern & San Pablo Divs.†	104	33	85,397	2,586	39.76	.....	20.12	.....	.....	.....	.....	11.58	17.90	0.46	0.34	7.68	37.76	7.10	5.00
Visalia Div.†	57	15	37,579	2,505	38.50	.....	20.60	.....	.....	.....	.....	4.18	22.29	0.43	0.04	7.33	34.27	7.10	5.00
Tulare Div.†	170	14	32,520	2,323	40.92	.....	18.98	.....	.....	.....	.....	9.37	26.94	0.50	0.51	8.89	46.21	11.15	5.00
Los Angeles, San Diego, Yuma & Wilm. Divs.†	416	34	98,299	2,891	51.15	.....	15.69	.....	.....	.....	.....	3.87	21.59	0.58	0.38	7.07	33.49	11.15	5.00
Gila & Tucson Divs.†	555	44	107,284	2,438	62.01	26.23	15.59	.....	.....	.....	.....	3.98	17.89	0.58	0.45	7.60	30.51	11.15	5.00
California Pacific Div.†	179	11	28,400	2,582	39.45	.....	22.83	.....	.....	.....	.....	3.56	18.05	0.43	0.72	7.68	30.44	7.10	5.00
Stockton & Copperopolis†	40	2	5,766	2,883	.....	60.09	23.06	.....	.....	.....	.....	28.36	8.32	0.37	0.32	5.87	43.24	.....	5.00
Sacramento Div.†	119	44	97,171	2,208	.....	26.28	20.51	.....	.....	.....	.....	3.86	19.03	0.45	0.36	8.68	32.38	.....	5.00
Oregon Div.†	151	7	23,447	3,349	.....	47.46	23.24	.....	.....	.....	.....	6.69	10.53	0.40	0.08	7.15	24.85	.....	5.00
Truckee Div.†	205	26	69,756	2,683	34.83	91.19	18.90	.....	.....	.....	.....	6.05	18.97	0.46	0.30	8.52	34.30	7.10	5.00
Humboldt Div.†	200	20	54,817	2,741	41.38	.....	20.65	.....	.....	.....	.....	6.80	17.19	0.43	0.35	7.74	32.51	7.10	5.00
Salt Lake Div.†	219	28	87,057	3,127	31.81	.....	16.0	.....	.....	.....	.....	7.78	22.34	0.56	0.20	7.21	38.09	7.10	5.00
Chi. & Eastern Ill., Main Line‡	160	40	112,108	.....	38.00	.....	15.00	.....	41.76	.....	.....	2.00	4.20	0.40	.....	5.40	12.00	.....	.....
Terre Haute Div.‡	65		24,720	.....	40.00	.....	17.00	.....	32.60	.....	.....	4.40	4.00	0.20	.....	4.80	13.5	.....	.....
Cleveland & Pittsburgh*	225	87	206,510	2,374	48.02	.....	18.95	4.60	17.50	3.014	0.879	3.85	3.17	0.53	2.30	6.43	16.28	4.43	3.00
Cleve., Tus. Val. & Wheeling	158	32	66,077	2,064	41.01	.....	10.72	.....	35.00	.....	.....	5.58	1.44	0.05	.....	6.19	13.86	0.51	2.25
Dela., Lacka. & Western, Bloomsburg Div.§	80	27	74,313	2,752	.....	.....	25.82	.....	.....	.....	.....	2.26	.....	0.58	.....	4.75	7.59	.....	.....
Erie & Pittsburgh*	98	29	79,716	2,749	42.39	.....	18.83	3.70	18.10	2.417	0.822	2.69	4.18	0.54	1.24	6.52	15.47	1.90	1.90
Grand Rapids & Indiana	332	43	131,921	3,068	49.15	40.49	18.35	.....	.....	.....	.....	2.38	7.76	0.43	3.58	5.54	19.69	3.50	2.50
Green Bay & Minnesota	247	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois Central, Chicago Div.‖	365	109	237,994	2,348	36.13	.....	15.46	5.60	20.97	.....	.....	2.56	4.86	0.31	.....	5.84	13.57	1.60	3.25
Middle Div.‖	167	19	17,391	915	28.56	.....	18.90	2.17	12.73	.....	.....	0.94	0.26	0.24	.....	4.84	10.28	1.60	3.25
North Div.‖	345	56	128,132	2,289	31.95	.....	12.77	4.05	12.94	.....	.....	5.13	5.18	0.38	.....	5.45	16.15	1.60	3.25
Springfield Div.‖	113	13	27,590	2,122	38.05	.....	16.11	2.10	14.23	.....	.....	2.20	3.89	0.34	.....	5.31	11.74	1.40	2.00
Iowa Div.‖	401	42	114,077	2,726	31.90	.....	15.72	4.25	12.66	.....	.....	3.67	7.31	0.31	.....	5.95	17.22	2.25	5.00
Jeff., Madison & Indianap.*	226	41	119,820	2,922	41.66	.....	16.86	3.26	22.53	3.290	0.740	3.55	6.54	0.28	3.00	5.82	19.19	2.60	2.40
Kan. City, St. Jo. & Coun. Bl.¶	247	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Shore & Mich. Southern, Buffalo Div.‡	.....	81	214,675	2,650	37.66	64.63	23.76	.....	.....	.....	.....	4.12	7.10	0.28	.....	6.01	17.51	2.60	5.69
Erie Div.‡	.....	125	291,173	2,408	36.99	.....	26.30	.....	.....	.....	.....	4.54	6.39	0.30	.....	5.80	17.03	2.28	5.43
Toledo Div.‡	.....	96	197,276	2,054	28.34	69.12	15.66	.....	.....	.....	.....	4.47	9.50	0.42	.....	6.22	20.53	2.67	4.08
Mich. Southern Div.‡	.....	204	557,406	2,732	40.64	70.70	20.34	.....	.....	.....	.....	2.90	7.65	0.31	.....	5.94	16.81	3.10	4.63
Little R'k, Miss. Riv. & Texas.	155	10	28,675	2,868	.....	70.00	11.00	.....	.....	.....	.....	2.21	3.21	0.61	2.68	7.17	15.88	.....	2.25
Louisv'e & Nash., First Div.**	435	63	154,214	2,448	30.82	.....	10.17	4.61	19.00	2.710	1.200	2.38	6.27	0.43	1.37	6.50	16.93	1.87	2.29
Second Div.**	200	31	67,969	2,193	34.73	.....	16.40	4.27	15.28	2.790	1.180	2.47	4.86	0.71	0.77	7.14	15.95	1.65	2.51
Memphis Div.**	130	14	41,500	2,964	36.98	.....	12.95	4.41	14.78	3.060	1.460	4.46	6.31	0.31	1.51	5.80	18.45	1.95	2.68
Nash. & Decatur Div.**	132	22	50,97	2,6-6	34.6	.....	14.61	3.92	16.01	3.830	1.300	4.61	5.67	0.30	1.29	6.30	18.20	1.84	2.30
South & North Ala**	180	41	99,855	2,314	29.24	.....	15.40	4.04	13.65	3.550	1.280	4.27	6.53	0.35	0.80	6.24	18.19	1.83	2.50
Mobile & Montgomery**	180	37	63,036	1,970	40.69	.....	13.77	5.51	15.28	3.120	1.250	5.04	6.71	0.39	1.11	6.09	19.25	2.87	2.50
St. Louis Div.**	207	29	76,965	2,447	50.77	.....	13.80	3.27	12.26	3.060	1.440	5.18	3.16	0.29	1.31	5.87	15.61	1.53	1.50
Ev., Hen. & Nash. Div.**	135	35	81,460	2,327	31.00	.....	15.31	2.96	14.18	5.010	1.550	5.67	4.14	0.25	2.02	6.38	18.46	1.25	1.75
New Orleans Div.**	141	27	62,374	2,309	45.41	.....	13.52	5.97	21.95	3.150	1.040	2.81	6.88	0.32	1.14	5.75	16.90	4.30	1.60
Pensacola & Selma Divs.**	134	31	25,671	828	49.02	.....	12.95	5.00	8.99	3.500	2.280	8.83	4.6	0.41	1.65	6.83	21.82	1.81	1.78
Marquette, Hough. & Ont.	88	20	62,478	2,154	44.0	.....	31.55	.....	49.61	.....	.....	1.39	5.61	0.43	.....	5.59	17.32	4.25	.....
N. Y., Pa. & O., Eastern Div.	225	86	208,587	3,123	37.93	.....	13.77	5.50	23.30	.....	.....	2.73	5.58	0.56	.....	6.12	14.99	2.13	2.68
Western Div.	197	59	194,263	3,293	26.70	.....	24.19	6.50	19.00	.....	.....	7.49	3.12	0.37	.....	5.97	16.95	1.95	2.68
Mahoning Div.	141	58	157,738	2,976	44.22	.....	18.67	3.90	24.00	.....	.....	4.06	3.03	0.38	.....	5.70	13.77	1.97	2.68
No. Cent., El. & Can. Divs.	147	46	121,700	2,646	30.96	.....	19.23	.....	.....	.....	.....	8.78	5.86	0.51	.....	6.31	21.46	1.80	1.60
Ohio Central.	213	30	115,690	3,856	35.05	.....	14.11	.....	.....	.....	.....	2.53	3.31	0.52	.....	5.49	11.85	.....	.....
Pennsylvania, N. Y. Div.††	129	126	416,265	3,304	33.64	.....	9.77	.....	.....	.....	.....	5.00	10.20	1.00	.....	.....	16.85	3.40	3.92
Amboy Div.††	204	49	108,094	2,204	48.05	.....	15.11	.....	.....	.....	.....	5.00	7.10	0.60	.....	.....	12.70	3.40	3.93
Belvidere Div.††	80	41	74,941	1,828	37.06	.....	10.92	.....	.....	.....	.....	3.40	9.20	0.90	.....	.....	13.50	3.40	3.94
Philadelphia Div.††	206	151	479,768	3,177	27.19	.....	13.51	.....	.....	.....	.....	4.10	5.50	0.60	.....	.....	10.20	1.40	2.88
Middle Div.††	132	96	332,263	3,461	24.68	.....	15.40	.....	.....	.....	.....	7.80	5.90	0.50	.....	.....	14.20	1.40	2.88
Altoona Div.††	.....	23	47,939	2,084	43.60	.....	17.61	.....	.....	.....	.....	5.20	3.30	0.50	.....	.....	9.00	1.40	2.90
Pittsburgh Div.††	226	187	537,304	2,873	25.08	.....	11.76	.....	.....	.....	.....	7.80	5.50	0.70	.....	.....	14.00	1.40	2.88
Tyrone Div.††	127	42	93,136	2217	21.27	.....	16.84	.....	.....	.....	.....	8.80	6.73	0.50	.....	.....	16.00	1.40	2.90
West Penn. Div.††	104	20	47,865	2,393	30.40	.....	32.05	.....	.....	.....	.....	5.30	3.90	0.30	.....	.....	9.40	1.40	2.90
Lewistown Div.††	63	8	17,827	2,228	27.80	.....	32.12	.....	.....	.....	.....	10.00	5.10	0.40	.....	.....	15.50	1.40	2.90
Bedford Div.††	57	6	14,970	2,495	27.58	.....	21.93	.....	.....	.....	.....	1.50	5.10	0.40	.....	.....	7.00	1.40	2.94
Frederick Div.††	109	10	21,964	2,196	22.85	.....	21.37	.....	.....	.....	.....	1.20	6.40	0.50	.....	.....	8.10	1.40	2.90
Monongahela Div.††	60	14	28,195	2,014	42.64	.....	15.38	.....	.....	.....	.....	3.40	3.20	0.50	.....	.....	7.10	1.40	2.95
Pitts., Ft. Wayne & Chicago, Eastern Div.*	383	144	496,393	3,238	40.84	.....	18.65	5.10	17.10	2.241	0.922	2.93	4.25	0.54	1.68	6.41	15.81	1.74	1.74
Western Div.*	280	118	392,227	3,324	38.9	.....	19.10	6.60	23.50	1.660	0.778	4.59	3.94	0.29	2.02	6.17	17.01	1.53	1.53
Pitts., Cin. & St. Louis, Little Miami Div.*	197	39	113,360	2,908	48.64	.....	12.96	4.86	18.39	2.785	1.118	5.16	5.45	0.55	2.56	6.06	19.78	2.50	3.00
P., C., & St. L. Div.*	247	100	310,707	3,107	29.94	.....	17.59	5.53	21.12	2.290	0.710	5.00	3.15	0.44	2.13	5.65	16.37	0.90	1.80
St. Paul & Duluth	175	24	70,680	3,320	.....	29.50	13.10	.....	8.60	.....	.....	4.00	8.50	0.40	.....	6.80	19.70	.....	2.5
Toledo, Del. & Burlington‡‡	370	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wabash, St. L. & Pacific, Peoria & Iowa Div.	421	51	163,534	3,207	33.93	.....	15 05	.....	.....	.....	.....	3.80	4.65	0.36	.....	6.45	15.26	1.50	2.5
West Jersey††	163	28	80,900	2,889	34.43	.....	12.16	.....	.....	.....	.....	14.60	11.70	2.60	.....	.....	26.30	4.00	3.87

* Five empty cars rated as three loaded ones.
† Switching engines allowed 6 miles per hour; helping engines, actual distance run.
‡ Switching engines allowed 6 miles per hour.
§ Fuel not estimated.
‖ Two empty cars rated as one loaded one.
¶ Three empty cars rated as two loaded ones.
** Switching engines allowed 6 miles per hour; five empty cars rated as three loaded ones.
†† Engineers', firemen's and wipers' wages not included in cost.
‡‡ Gauge of this road, 3 ft.
The ton of coal is 2,000 lbs., unless otherwise noted; 25 bushels counted to the ton.
Repairs generally include all shop expenses.

The New York Elevated Roads.

But few persons who have not been in New York since the construction of the elevated roads, and witnessed their equipments and operations, can have any adequate idea of the extent of them, and of the people, machinery and appurtenances required in working them. A recent inventory discloses the fact that there are 32 miles of roadway, 161 stations, 203 engines, and 612 cars, while 3,480 trains a day are run. There are 3,274 men employed on these roads, 309 of whom are engineers, 258 ticket-agents, 231 conductors, 308 firemen, 395 guards or brakemen, 347 gatemen, 4 road-inspectors, 106 porters, 33 carpenters, 27 painters, 69 car-inspectors, 140 car-cleaners, 40 lamp-men, and 470 black-Smiths, boiler-makers and other mechanics employed on the structure and in the shops. Most of the ticket agents are telegraph operators, but there are 13 other operators employed. There are four double-track lines in operation. The aggregate daily receipts vary from $14,000 to $18,000; and as many as 274,023 passengers have been carried in one day. Engineers are paid from $3 to $3.50 per day; ticket-agents, $1.75 to $2.25; conductors, $1.90 to $2.50; firemen, $1.90 to $2; guards or brakemen, $1.50 to $1.65; and gatemen, $1.20 to $1.50. The above items do not include machinists and other employés in the workshops, or the general officers, clerks, etc.—*Engineering and Mining Journal.*

Enough of Railroading.

On board the Erie train that was wrecked this side of the Summit, Nov. 15, was a brakeman who was making his first trip. When the train, after breaking in two, ran together again and telescoped four cars right ahead of him the new brakeman jumped to the ground and went forward to view the wreck. After gazing at it a few moments and contemplating how narrow was his escape he turned to one of his fellow brakemen and said: "This is my first experience in railroading and I'll be d——d if it won't be my last. Just tell the conductor that I'll give the company the benefit of my short services and have gone back again on the farm to work."—*Port Jervis Gazette.*

A Convenience in Car Shops.

The Cleveland Bridge & Car Works, instead of using horses and scaffolding in working about cars in the erecting shop, make use of a substitute which is found to be an improvement. It consists of standards or posts, 2 by 4 in., placed in pockets mortised in the floor and in the beams overhead. Upon these standards are brackets or arms of 4 by 4 by 24 in. timbers with mortises 2 by 4 in. about 3 in. from the end. A bolt is put through the short end of the bracket to prevent its splitting. These brackets can be slipped up and down, and are held at the required height by ½-in. iron pins inserted in holes through the standards, and planks laid upon them to form the scaffolds. Eight standards are used to a car—4 on each side, or 2 on each side of door. When using two planks, the scaffolds each side of door are independent; but a third plank across the door reaches the whole length, and in connection with one across each end, makes a continuous scaffold all round.—*National Car-Builder.*

Electricity as a Motive Power on Railroads.

The St. Paul *Pioneer-Press* reports that President Villard, of the Northern Pacific, has recently completed a contract with Thomas L. Edison for the construction of 50 miles of railroad in Minnesota during the next year, upon which Mr. Edison is to test the efficiency of his electrical engines as a motive power for railroads. It is stated that Villard agrees to pay Edison a stipulated sum for the entire road if the new power works satisfactorily, and the latter will be backed in his novel enterprise by capitalists abundantly able and willing to risk large amounts in making an experiment of the entire success of which the inventor seems entirely confident and certain. Under the terms of the contract entered into, the 50 miles are to be completed within the year, and if the electric motors do not prove satisfactory the greater portion of the cost will be borne by Mr. Edison and the gentlemen associated with him While the details of the contract have been withheld up to the present time, there is no room to doubt that it has been fully agreed upon by Villard and Edison, and it is expected that the experimental line will be built between St. Cloud and Minneapolis and St. Paul.

Pie.

The Erie recently opened a station at a small village in Bergen County, N. J., known from time immemorial as Small Lots. But the name of the station is Fair Lawn, which seems to be a sort of translation.

A road up in Canada advertises special rates to parties wishing to attend a pie-eating match in a town on the line. Probably the restaurants on the road took the opportunity of working off all their old stock.

Monongahela River Improvement.

Sealed proposals will be received by the Monongahela Navigation Co. at its office in Pittsburgh, Pa., until noon of Dec. 22, for the building of a lock and dam at Lock No. 7 on the Monongahela River, 84 miles above Pittsburgh. The dam will be built of crib-work filled with stone, and the lock of cut stone masonry. Approximate quantities are 9,600 cubic yards earth and rock excavation, 8,000 cubic yards masonry, 13,000 cubic yards stone filling of dam and 900,000 ft. lumber. Plans and specifications can be seen at the company's office after Dec. 6.

RAILROAD GAZETTE

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S. WRIGHT DUNNING AND M. N. FORNEY.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

THE RAILROADS AND THE POST-OFFICE.

The report of the Postmaster General for the last fiscal year shows that 31¼ per cent. of the receipts and 28⅞ per cent. of the expenses of the department were absorbed by the payments to the railroads for transportation and postal cars, the sum being $11,411,121. These payments were made for the use of 91,569 miles of railroad, with an average service 1,131 times a year—little more than a mail each way 1½ times daily—for which the average payment was 11.22 cents per mile. Many of these mails, of course, were enormous ones, weighing many tons, and a fair payment for these carried at passenger speed would be many times 11¼ cents; but on the other hand many doubtless consisted of a few light mail bags, so that we may not hastily decide that the Postmaster General's claim that "while some railroads may not be fully paid for the service they render, the great majority are overpaid." The method of payment is such that charges are not proportioned to services, and when that is the case, some will always be overpaid, even if the average charge is too small. Almost the only complaints of inadequate payment have been from roads hauling postal cars and having immense mails. Roads with small mails and ordinary service seem to have been satisfied.

The average payment *per mile of railroad* in the fiscal year was $125 (nearly). The average total earnings of these railroads in that year were about $6,700, so that less than 2 per cent. of their income came from transportation of mails.

The Post-office Department is not self-sustaining, but the reason of this is not because it pays much more than value for the service it gets, but because Congress has deliberately determined that the department shall perform certain services for the public at very much less than the cost could be made under any circumstances. One of these services, which commonly passes without notice (especially by newspapers, which profit most by it) is the transportation of newspapers and periodicals. These, when mailed to regular subscribers from the office of publication, are carried for two cents a pound to all parts of the country —$2 per 100 lbs from New York to San Francisco, 3,300 miles, which is less than 1¼ cents per ton per mile for matter carried at express speed, together with services which, on the average in the department, cost two and a half times as much as the transportation! But the transportation of newspapers, of course, is a much larger proportion of the whole expense than the transportation of letters, each of which has to be handled more, while it weighs not a quarter as much. In revenue the contrast between equal weights of letters and these newspaper mails is tremendous: there were 34,976 tons of this "second-class" newspaper mail, which paid nearly $1,400,000 postage, while the letters, which weighed not more than 16,350 tons, must have paid about $30,000,000.

The Postmaster General does not complain of this, however, and it would probably be impossible to make any such change in newspaper rates as would bring them up to the cost of the service. What he does complain of is the comparatively new service of carrying merchandise through the mails. "Congress," he says, "saw fit a few years since to make the Post-office Department a common carrier of merchandise; and, moreover, it fixed the rates of transportation so low that the mere cost of handling this class of mail matter, to say nothing of its transportation, is unremunerative." And he says that no increase in this business can ever make it remunerative, because the cost of receiving, carrying and delivering is much more than the charge, though the latter is much higher on merchandise than on newspapers and periodicals sent from the office of publication.

It seems that in this regard it is a mistake to charge the same rates for all distances. For letters this method answers very well, and for newspapers it is not so bad as for merchandise. In the case of letters the transportation is but a small portion of the total cost—but an insignificant proportion of the total receipt. If we distribute the cost of transportation according to weight, even if we charge the whole cost of postal cars to letters, it could not have been more than ⅔ cent per letter, and nearly $13,000,000 of the $19,300,000 paid out by the department for transportation was for carrying second, third and fourth-class matter, which yielded less than $6,000,000 of revenue. To make the same rates from Calais to San Diego as from New York to Brooklyn, on letters weighing half an ounce, on which the average cost of transportation is but ⅔ cent, is one thing; to charge the same for four pounds of muslin for the two distances is quite another. A few years ago whole sets of harness (piece by piece) were commonly mailed to Arizona and other places to which transportation by wagon or pack mule was very costly, and it was all one to the buyer whether he purchased in the nearest town or in Boston. In Europe, where the mail parcel service has developed to an extent entirely unapproached in this country, there is no attempt to make rates uniform for all distances, though there the countries are so very much smaller than this that such a system would be much more rational—or less irrational—than here. Even in the German Empire, where the government pays the railroad companies nothing for carrying the mails, the charges are by "zones"—so much for distances within 200 miles, so much for distances from 200 to 400, and so on. This service may be made a very great convenience to the public, and if the government will only charge as much as it actually costs, the railroads and express companies need not complain. But they have a right to complain if the traffic is taken from them by charging below cost, and saddling the deficit on the tax-payers, or even on other branches of the postal service. As it is, the letters appear to pay about half the cost of the other mails, not a quarter of their cost is covered by the postage on the latter, and the rest is paid from the other national revenues—that is, by taxes. It is, of course, questionable whether the government is justified in going into the business of a common carrier of merchandise, at least where private enterprise has already provided for the service; but we do not lay much stress on the argument of the impropriety of the government going out of its ordinary field. If the railroads and express companies cannot meet government competition, that will be evidence enough to the public that the government is fit for the work. But a competition in which the government does work for less than cost and drives the carriers from the field, and levies on the tax-payers, including the carriers, to pay the cost, does not deserve the name and needs to be carefully guarded against. For the most unreasonable things of this kind, if they are convenient and have become customary, it is almost impossible to put an end to. Such a mail parcel service as they have in Germany, if once introduced into this country (where it would doubtless cost scores of millions yearly), in a little while would be looked upon as indispensable, and though leaving an immense deficit yearly, could hardly be abolished. The very newspaper rates in this country are an example, on a smaller scale, though not by any means on a small one. Apparently, even with the present rates, the letter mail may in time become so great as to cover the whole expense of the Post-office Department, and then reform in the direction of making one branch of a service pay more in order to cover its own expenses will be practically impossible. But if that day shall ever come, it must be by checking the growth of the merchandise mail. It may well be that this will develop much faster than the letter mail, and if so the deficit will never disappear, but will rather tend to increase.

The Postmaster General says that there is and always has been a disposition on the part of the railroad corporations in dealing with the department to exact their own terms." There have been very few cases, we believe, in which the corporations have had any power to exact anything, and in these cases the government, or rather Congress, has usually exacted its own terms without the least regard to right and justice. Rates per pound are fixed by law for ordinary mails; additional services, such as postal car accommodation, were for years insufficiently paid for, and it was with the greatest difficulty that Congress could be induced to pay any attention to the subject. But no rate of payment on fixed or uniform terms for all roads can be just. Mail service, just like other railroad service, varies in cost and value, according to circumstances, and the payment should be adjusted somewhat in proportion. When the controversy concerning payment for postal car service was pending, the railroads asked that the fixing of the prices be left to arbitration. This was then done in England, in case the post-office authorities and the railroad companies could not agree (as they almost always did) on a proper rate of compensation, after negotiation in each case. This certainly is not exactly their own terms. The railroads are entitled to payment for mail service equal to what they receive for other service of equal cost, and if the government can show that they are getting more than that, it may properly ask that their charges be reduced; but if the companies can show that they are getting less than that, they are justified in asking for more, and the Department in paying it, unless by competition among them or otherwise it can get the work done for less. Their competition, however, could affect but a comparatively small part of the whole mail service, and they are not likely to offer to do this work for cost or less, as they frequently do other work. The result, we imagine, would not be as such a decrease of the expenses of the department as to cover any considerable part of the annual deficit.

ACCIDENTS TO RAILROAD EMPLOYES.

Unfortunately, the discussion of the cause and prevention of accidents of this kind, the probable number of which was indicated in an article in these columns last week, must, to a very great extent, be conducted in the dark. The records and statistics of them are so imperfect in this country that—as was shown last week—their number even can be estimated only approximately. In some of the state reports, notably that of Massachusetts, some classification of the accidents is made, from which the relative number due to some of the different causes can be known. Thus, during the last ten years there were 410 employés killed and 551 injured in that state, or a total of 961. Of these 269, or nearly 30 per cent., were injured in coupling cars; 223, or 23 per cent., by falling from trains; 127, or 13 per cent., by train accidents, and 73, or 7½ per cent., by overhead bridges. The New York reports are not given in such a way as to make it possible to tell what proportion of the deaths and of the injuries was due to those different causes. On the New York Central and on the Erie roads there were 843 employés killed and injured, of whom 389, or 46 per cent., were injured in coupling cars; 114, or nearly 13½ per cent., fell from cars or engines, and 33, or 4 per cent., were injured by striking bridges.

On the Pennsylvania Railroad a careful record, kept for the five years from 1875 to 1879, shows that 34½ per cent. of all those injured, including three killed, were hurt in coupling cars.

The Ohio Railroad Commission in the report of 1880 says:

> "Forty per cent. of those injured are injured in coupling cars; 7 per cent of the killed from the same cause. Sixteen per cent. of the killed also are killed by falling or being thrown from engines or trains. The persons upon whom injury or death thus falls are generally freight brakemen or yardmen. Some companies have stringent rules protecting this class, and when they have been vigorously enforced they have done much good. But, unfortunately, they are not enforced as they should be. Companies have not that incentive to enforce such rules that they have in protecting passengers. The average life of a freight brakeman is only ten years. Yet, knowing this, they become so inured to their dangerous calling as practically to take no reasonable precautions for their own safety, and in case of death or injury no liability falls upon the company."

The two most prolific causes of accidents to railroad employés, it will thus be seen, are coupling cars and falling from trains. The figures given above indicate that from 50 to 60 per cent. of all the victims are injured in that way.

It is, therefore, not surprising that attention should be given to the features in the construction of cars to which this terrible sacrifice of human life and awful amount of pain and suffering are due. Last year the Legislature of Massachusetts instructed the Board of

Railroad Commissioners of that state to investigate and report on "the subject of freight draw-bars and couplings." This special report is contained in the last annual report of that body. The Commissioners say that "the possibility of legislation by any one state is limited by the fact that its railroad cars are constantly meeting the cars of other states," and that "any legislation hindering the free exchange of freight cars would produce great confusion and injury to business." They further say that "it is apparent that there are devices which will lessen the number of persons annually injured or killed while engaged in coupling freight cars," and they "are of opinion that every railroad providing itself with new freight cars should adopt some automatic coupler for these cars. * * * * It must not be forgotten that in ordinary cases of accidents to employés, no action lies against the company; and this may be one reason why safety appliances for the protection of employés are less speedily adopted than those which protect passengers." The report closes with the recommendation—and this is the only practical measure proposed in it—that a bill be enacted "which shall require for cars newly bought or constructed by Massachusetts railroad corporations for use in this state the Safford draw-bar, or some other automatic coupler." Considering the high character of the work heretofore done by the Massachusetts Commissioners, all who are interested in this important subject must feel great disappointment in their report. There is, in the first place, a great difference of opinion, among those whose experience and observation gives their views the greatest weight, with reference to the advantage of using an *automatic* coupler, which the Commissioners recommend so confidently. In the next place, the Safford draw bar as ordinarily made is not an automatic coupler, so that either the first or the last recommendation must be a mistaken one.

The Legislative Assembly of the Province of Ontario last year appointed a select committee to inquire into this subject. This committee made a report which, with an abstract of the testimony taken, is given on another page. From that testimony it will be seen that one of the prolific causes of injury to men in coupling cars is due to variation in the height of draw-bars. The Massachusetts Commissioners themselves say: "Unfortunately there is a wide difference in the height of freight cars, although that difference has been greatly reduced since the convention of car-builders in 1870;" and yet they do not recommend that the draw-bars of "cars newly bought or constructed in Massachusetts" shall be made of the standard height recommended at the convention referred to.

A year or two ago Mr. Leander Garey, Superintendent of Cars of the New York Central & Hudson River road, who gives great attention to the safety of trainmen in the design and construction of cars for that line, inquired of an intelligent brakeman whether he could suggest anything which would make coupling cars less dangerous. The brakeman suggested that if there were handles on the ends of cars over the draw-bars, so that a man could hold on to one of them, it would often prevent accidents. Mr. Garey acted on the hint, and now puts them on all box cars. In a contract for several thousand cars just ordered for that line it is specified that "the end of the car, at left-hand centre, to be supplied with a double handle 36 in. long." As a man can hold on to the brake shaft on the other side and at the opposite end of the car, the handles are put on one end only, so that when two of these cars come together there will be the handle on the one, on one side of the draw-bars, and the brake-shaft of the other on the opposite side, so that a man has something to hold on by, no matter from which side he couples.

In investigating the subject the Canadian committee issued a circular containing a series of questions relating to accidents to railway employés. One of them was: "What do you consider the best means to prevent accidents arising from railway frogs?" Of 43 answers, 37 recommended filling up the frogs with wood. From the report of the Massachusetts Commissioners, no one would ever know that accidents in coupling cars were caused by railroad frogs.

With reference, though, to the clear space which should be provided between the cars in case one or both of the draw-bars is broken, and also the size and arrangement of dead-woods, both reports are silent. As most or all of our readers know, one or two wood or iron blocks are attached to the ends of freight cars, the purpose of which is to have sufficient room for a man between them in case one or both of the draw-bars, or their attachments, should be broken when they come together, and a man is between them to couple. Even the commonest of common sense, it would seem, would dictate that the space thus left should be so wide that a man would not be crushed if a draw-bar or its attachments should be broken. Astounding as it may seem, though, many of these blocks are made so thin that a man between the cars is certain to be crushed if the blocks come together. Some of them are not over 3 to 4 in. thick, thus leaving a clear space of only from 6 to 8 in. between them for a man's body. Furthermore, in some cases of this kind and on cars with thicker dead-blocks, it will often be found that the space which is thus left, instead of being "clear," is encumbered with projecting nuts or bolts, the ends of the side sills, or, worse still, a cast-iron horn attached to the corner for fastening a rope or chain for horses or switching engines to move the cars by.

Any one who will examine the cars used on the different roads will discover that there are two distinct systems of dead-blocks in use—the one to be found generally on the Pennsylvania and the Erie roads and their connections, the other on the New York Central and the Chicago roads and their connections. The cars on the first-named lines have two blocks, generally of cast iron, placed above and on each side of the draw-bars, with about 1½ to 2 ft. space between them. The cars on the latter lines have one block over the draw-bar, which is of about the same length as the distance between the two blocks. The consequence is that when two cars, one having double and the other single blocks, come together, if the draw-bar breaks the single block inter-locks between the two double ones, and if a man is between the cars he will inevitably be crushed. At present it is a disputed point which system is the best, and certainly the question of their relative merits, so far as security to employés is concerned, is one on which an investigation like that of the Massachusetts Commission or the Canadian Committee might be expected to shed some light; yet on it, as we said, they are both silent. Each system is in use on thousands of cars, and of those built every year it would be difficult to say whether there are more made with single or more with double dead-blocks. To alter the cars of either system to the other would cost hundreds of thousands of dollars, and the evil of this diversity, although now enormously great, is increasing almost proportionately to the growth of the traffic of the country. Our statistics, owing to their meagreness and incompleteness, throw but little light upon the question of the relative advantages of the two systems.

The record of the Pennsylvania Railroad already quoted from shows that in five years 26½ per cent. of the persons injured, and 44½ per cent. of those killed in coupling cars were caught between the dead-blocks. Over 30 per cent. of the injured were caught by the draw-heads. Unfortunately we have no similar record of accidents of that kind on a road which uses single dead-blocks.

In the last column of Table II., published last week, the kind of dead-blocks used on the different roads named in that table is given. It will be noticed that in nearly all cases the roads which use the double dead-block have a high injury rate, and those which use the single block a low one. The Michigan Central road in 1880 is apparently an exception to this. It is not at all certain, though, that the coincidence of a low rate of injury with single dead-blocks, proves anything. The data upon which the table is based are entirely too incomplete to permit any certain deduction with reference to th is point; nevertheless, they do emphasize the question which has so long been awaiting an answer, whether double or single dead-blocks are the more dangerous to railroad employés.

Although the figures in Table II. may not be conclusive with reference to this matter, they do nevertheless suggest some rather awkward questions. If it be assumed that the New York Central, the Chicago & Northwestern and the Boston & Albany have reported correctly, then the figures indicate that from three to four times as many employés are injured on the Pennsylvania, the Erie and some other roads than on the New York Central. On the Pittsburgh, Cincinnati & St. Louis the disproportion is still greater. It may be said that the average trains on the New York Central and Northwestern were smaller than on the other lines, and therefore the number of employés injured in proportion to locomotives was less, proportionately. But in the state reports for 1879 the average weight of freight trains was given as follows: New York Central, 500 tons; Northwestern, 334;* Erie, 280; Pennsylvania, 367½ to 956½.

From the data given in 1880, the average weight of train, not including locomotive and tender, on the Pittsburgh, Cincinnati & St. Louis Railway is calculated to be 367 tons. The explanation of the greater rate of injury, therefore, cannot be found in the size of the trains.

On the one hand, if we regard the subject on the assumption that more men, relatively, are injured on the Pennsylvania and Erie roads than on the New York Central and Chicago & Northwestern, then it might well be asked of the managers of the former why this is so. If it is due to imperfect regulations or appliances, then a terrible responsibility rests somewhere. If, on the other hand, the *excessive* injury on the Pennsylvania and Erie roads is only apparent, and seems so because the New York Central and Northwestern roads do not report all the injuries to their employés, then it may well be asked whether human flesh and blood are so little valued that the railroad officers need not trouble themselves to report how well or how ill they have protected it.

No judgment is expressed as to where the responsibility, if any, lies; but the statistics we have given suggest some very urgent questions for the managers to answer, and inquiries for boards like the Massachusetts and Connecticut Railroad Commissioners to make.

It may be said that the difference in the rate of injury on the various roads is due to the fact that some of them report the lesser ones, which are of little importance, more fully than the other roads do.

Let us see how this is: the fullest report furnished to the State Engineer of New York is from the Erie road, and as more slight injuries are received in coupling and switching cars than in any other way, we will quote a dozen of them from those which occurred on that road in the order in which they are given in the State Engineer's Report of 1879, omitting the killed, and also names and dates:

"Right arm badly bruised and broken in two places, between elbow and wrist.—Right leg badly bruised, but no bones broken.—Hand bruised and thumb broken.—Hand badly crushed, and afterwards amputated.—One finger of right hand crushed.—Right hand crushed; second finger amputated at middle joint.—Left leg badly bruised; leg amputated.—Left hand badly crushed.—Right hand injured.—Caught through waist and slightly squeezed.—Left arm caught between the bumpers, breaking one of the bones below the elbow.—Arm bruised below the elbow (but no bones broken).—Right foot run over by stumbling in coupling; two toes amputated."

It is true that some of these accidents do not permanently disable the victims, but our list sufficiently indicates the suffering which they entail, and certainly very few of them are regarded as unimportant by the victims. It is certain, too, that many of them would be prevented if improved and uniform methods of constructing cars were employed.

If the Commissioners of Connecticut in their investigation of the subject will try and bring about:

1. A uniform height of draw-bar;
2. A clear space of not less than 12 in. between cars when the dead-blocks come together;
3. The use of a uniform system of dead-blocks;
4. The application of adequate handles between cars for men to hold on in coupling;
5. The use of links of uniform and sufficient strength and long enough to couple easily;

they will accomplish very much more than will be gained by recommending the use of any special device. The objection to the legislation which the Massachusetts Commission recommends the "General Court" to enact is, that once such a law exists, its tendency will be to lead all railroad companies into an easy contentment with things as they are, if they only conform to the requirements of the law. The merits of the draw-bar, the use of which it is proposed to make obligatory in Massachusetts, need not be discussed here. It is favorably regarded by some railroad managers, while others think it has comparatively little value.

But besides the danger from coupling cars, railroad men are exposed to other risks almost or quite as great. It has been shown that nearly as many are injured by falling from trains as from coupling. To this branch of the subject the Canadian Committee devoted especial attention. The evidence will be exceedingly interesting and instructive, and will well repay reading.

Some curious opinions were expressed. Some of those who testified said that it was the "fresh hands" who were usually injured. Other railroad officers of great experience said it was oftenest the old hands. Nearly all who gave evidence were agreed that the running-boards of the tops of cars should be made from 24 to 36 in. wide and should extend from 6 to 10 in. over the ends. There was great diversity of opinion about the use of railing on top of the car for the men to hold on by. It was indicated very plainly, though, that in Canada at least (and if report is true the same condition of things exists here) brakes on freight cars are very much neglected and are often out of repair. It was made plain from the evidence that brakes, ladders, hand-holds and running-boards

* This weight is estimated from the average number of cars in train and the average load of train given in report.

should always be carefully inspected, to see that they are in good order before cars are received on any road.

Some testimony was given to show that the occupation of a railroad employé is not a specially dangerous one, but the matter which will probably attract the most attention was the recommendation of Mr. C. J. Brydges and others who appeared before the committee that the braking of trains should be done by brake vans, as in England. If, as one witness stated, in bad weather the braking is practically done in this way now, owing to the difficulty men have of getting over the tops of cars, it is a strong argument in favor of Mr. Brydges' suggestion, which, probably, at first view, will not commend itself to American railroad managers. It is certain though that the following recommendations, which they made, would, if enforced, make the occupation of railroad employés less dangerous than it is now. Those referred to are:

"1. That all overhead bridges should be built so as have a clear space of at least 7 ft. from the top of the highest freight car to the lowest member of the bridge above.

"2. That the running-board upon freight cars should be not less than from 24 to 30 in. wide, and extend as far as the dead-wood of the cars will safely admit, so as to leave as little space as possible between the ends of the running-board on each car.

"3. That all frogs and wing rails on railways should be filled in with wood."

There is still another measure which, if carried out, will be certain to lead to greater security to railroad employés and immunity from accident. This is, that all railroad companies should be compelled under proper penalties to report all accidents to employés in detail as to circumstances and causes. Without such reports, it is impossible to know either the extent of or the remedies to apply to what is now incontestibly an evil of very great magnitude.

The Southern Railway Association.

The report of the Southern Railway and Steamship Association for the year ending with August last shows that the total shipments from the four Northern cities, Boston, New York, Philadelphia and Baltimore, to the twelve Southern towns covered by the Association, and to all other stations of the Western & Atlantic and Selma, Rome & Dalton roads, was 74,909 tons, yielding a revenue of $1,074,402. To one accustomed to the through shipments of the trunk lines on the Chicago roads these shipments seem very small. Shipments west out of New York alone over the trunk lines were nearly as great as this in two weeks of September or October last, and the eastward shipments of Chicago have two or three times been greater in a single week. But the traffic is very important to the roads engaged in it, and it does not include, be it remembered, shipments to the coast ciites, while the New York shipments west include those to all the large cities of the West. These shipments southward were nearly the same as the year before, and yielded nearly the same revenue.

The chief traffic under the protection of the Association is the cotton shipped in the other direction, including what goes to South Atlantic cities. There was a large increase in the amount of this and an enormous one in the revenues, as shown below:

	1880–81.	1879–80.	Increase.	P. c.
Cotton, bales	673,475	553,119	120,356	21.8
Revenue	$1,430,307	$1,077,625	$352,682	32.7

That the increase in revenue was so much greater than that in the number of bales is not due entirely to higher rates, but partly to the fact that a large part of it was shipped to northeastern and New England towns, much longer distances than the average.

The average weight of bales is usually less than 490 lbs. Counting it 500 this important freight amounted to 168,369 tons, which is not nearly equal to a *week's* through shipments *eastward* over the trunk lines. Cotton, to be sure, is but one staple, and the eastward shipments over the trunk lines include many; but cotton is, after all, almost the only staple shipped out of this part of the South.

The chief cotton shipping points at which the business is pooled under the direction of the Association are Augusta, Atlanta and Montgomery, whose aggregate shipments last year were 425,838 bales—63 per cent. of the total cotton business of the Association, Augusta alone having 29 per cent. Next to these there comes Macon, with less than 14,000 tons (55,304 bales), an average of about 4½ car-loads daily.

The roads in this Association carry Northern merchandise to stations on their lines from both the East and the West, and Northwestern products, such as flour, grain and provisions, reach them from both directions directly by rail over such lines as the Louisville & Nashville and the Cincinnati Southern, and by way of the North Atlantic sea-ports, usually by steamer thence to Savannah, Charleston, etc. The traffic coming directly from the Northwest is received almost entirely by the freight organization known as the "Green Line." The Association does not divide this traffic, but there are agreed differences of rates by the two routes, adjusted so as to give the traffic of the coast cities, and of but few others, to the Atlantic cities and steamers plying between North Atlantic and South Atlantic ports. The Association compiled statistics of the Green Line business entering the territory of the Association during the nine months ending with August last, and found it to amount to 325,094 tons, yielding a revenue of $3,021,885. This is about twice the amount of the cotton freight and more than twice the cotton revenue of the Association for the whole year. And it is true of the cotton country generally, we believe, that more freight is brought into it than is sent out of it—very different, indeed, from the traffic currents of the Western agricultural districts.

The Southern Association is, we believe, now thoroughly successful. It has passed through a great many difficulties, and for some years its objects were very imperfectly attained. Although the magnitude of the traffic it includes is small in proportion to that of many Northern roads, it is perhaps quite as important to the roads which carry it, many of which now for the first time since the war seem to be enjoying reasonable prosperity.

Traffic is not divided by the roads in this Association, but the earnings from it. The roads pay over to the Association a percentage of their receipts from all traffic covered by their agreement, as security for fulfilling it. These payments have been regularly made during the year reported on, and balances promptly paid. The possession of this percentage of earnings gives the Association a power which it seemed never able to exercise until this provision was adopted.

October Accidents.

Our record of train accidents in October, given on another page, contains brief accounts of 131 accidents, whereby 31 persons were killed and 133 injured. Of these accidents 20 caused the death of one or more persons, and 32 caused injury but not death, leaving 79, or 60.3 per cent. of the whole number, in which no injury to persons is recorded.

As compared with October, 1880, there was an increase of 11 accidents, but a decrease of 38 in the number killed and of four in that of injured.

Altogether the comparison is not so unfavorable as has been the case with nearly all the months of the present year.

These accidents are classed as to their nature and causes as follows:

COLLISIONS:		
Rear collisions	36	
Butting collisions	13	
Crossing collisions	2	
		—51
DERAILMENTS:		
Broken rail	1	
Broken wheel	2	
Broken axle	1	
Broken truck	2	
Broken car	1	
Broken bridge	6	
Spreading of rails	1	
Land-slide	4	
Wind	1	
Accidental obstruction	1	
Cattle on track	10	
Misplaced switch	9	
Purposely misplaced switch	2	
Rail purposely removed	1	
Malicious obstruction	1	
Unexplained	34	
		—77
Boiler explosions	2	
Cars burned while running	1	
Total		131

Six collisions were caused by trains breaking in two; two by misplaced switches; two by failure to use signals properly; two by runaway trains; one each by mistake in orders, by a car carelessly left on the main track and by a broken locomotive.

A general classification shows 15 accidents caused by defects or failures of equipment; 8 by defects of road; 6 by the elements or the weather; 11 by accidental obstructions not readily to be seen or prevented by trainmen; four maliciously caused; 53 due directly to carelessness of management or defective discipline, and 34 unexplained.

There were 59 of these accidents which happened in daylight and 55 at night, while in seven cases the time of day is not definitely fixed. Night seems to be the most probable time for accidents, but there are usually more in the day time.

A division according to classes of trains and accidents is as follows:

Accidents:	Collisions.	Derailments.	Other.	Total.
To passenger trains	2	24	1	27
To a pass. and a freight	12	..	..	12
To freight trains	37	53	2	92
Total	51	77	3	131
Casualties:				
Killed by	18	12	1	31
Injured by	52	77	4	133
Total	70	89	5	164

The number of accidents is large, though smaller than that of September. No special cause can be found for the great number in the weather or circumstances of the month, although there were heavy rains in some parts of the West. The record, however, presents some specially objectionable features.

The number of misplaced switches is large, no less than nine derailments and two collisions having been caused in this way. It does certainly seem as if the number of accidents of this kind could be lessened by strict discipline and prompt and certain punishment for this very pernicious form of carelessness; that it is not so lessened is certainly not creditable to our railroad managements.

There were no less than four successful attempts at train-wrecking. In one case obstructions were put on the track, in another a rail was removed and in two more switches were misplaced. In only one case were the wreckers caught, and they are to be tried for murder, an engineer having lost his life in the wreck.

Six broken bridges are in the record, an unusually large number. One of these had its abutments washed out; of the others we have no special information, except in two cases that they were small wooden bridges; nothing as to their age and condition.

For the year ending with October the record is as follows:

	Accidents.	Killed.	Injured.
November	145	40	165
December	135	29	141
January	223	30	182
February	149	27	253
March	113	38	177
April	63	22	66
May	85	24	76
June	73	31	78
July	102	38	122
August	129	31	67
September	144	56	227
October	131	31	133
Totals	1,492	397	1,687
Total, same months, 1879–80	953	280	1,002
" " " 1878–79	886	182	685

The averages per day were, for the month, 4.23 accidents, 1.00 killed and 4.26 injured; for the year, 4.09 accidents, 1.09 killed and 2.62 injured.

The average casualties per accident for the month were 0.237 killed and 1.006 injured; for the year they were 0.266 killed and 1.131 injured.

The averages per month for the year were 124 accidents, 33 killed and 141 injured, against similar averages of 79 accidents, 23 killed and 84 injured, in 1879–80, and 74 accidents, 15 killed and 57 injured, in 1878–79. The increase this year is very large.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Burlington & Missouri River in Nebraska.—The *Republican Valley* line is extended from Wymore, Neb., eastward to Table Rock, 31 miles. On the western end this line is finished fifty miles west of Culbertson, an extension of 34 miles.

Chesapeake & Ohio.—This company's *Elizabeth, Lexington & Big Sandy* road is completed by laying track from Herat, Ky., to Ashland, 22 miles.

Chicago, Milwaukee & St. Paul.—A spur has been completed from Waterloo, Wis., to Portland, 2 miles.

Chicago & Northwestern.—The *Menominee River Branch* is extended from Florence, Mich., west to the Brule River, 4½ miles. Branches are completed from Carroll, Ia., south to Manning, 17 miles, and from Carroll southwest into Shelby County, 35 miles. The *James River Branch* is completed from Redfield, Dak., north to Ordway, 50 miles.

Cumberland & Ohio Northern Division.—Extended from Taylorsville, Ky., southward to Bloomfield, 10 miles.

Danville & New River.—Completed from Danville, Va., westward to Cascade, 22 miles.

East Tennessee & Western North Carolina.—Completed from Johnson, Tenn., east to Elizabethton, 7 miles.

Galveston, Harrisburg & San Antonio.—Extended from Sabina Creek, Tex., west by north to Uvalde, 11 miles.

Greenville, Columbus & Birmingham.—Extended from Stoneville, Miss., east to Johnsonville, 32 miles; also a branch completed from Stoneville south to Arcola, 12 miles. Gauge, 3 ft.

Indiana, Bloomington & Western.—On the *Ohio Extension* track is now laid from Indianapolis, Ind., eastward, 25 miles.

Kansas Central.—Extended from Garrison, Kan., west to Clay Centre, 22 miles. Gauge, 3 ft.

Lehigh Valley.—The *Clinton Branch* is completed from the junction with the main line to Clinton, N. J., 3 miles.

Sabine & East Texas.—Extended from Pine Island Bayou, Tex., northward to Village, 29 miles; also from Beaumont south to Taylor's Bayou, 16 miles.

Sioux City & Pacific.—*The Nebraska Division* is extended from Atkinson, Neb., west by north to Long Pine, 18 miles.

State University.—Track laid from University station, N. C., to New Hope, 6 miles.

This is a total of 408½ miles of new railroad, making 6,649 miles this year, against 5,342 miles reported at the corresponding time in 1880, 3,150 miles in 1879, 1,947 miles in 1878, 1,945 miles in 1877, 2,102 miles in 1876, 1,150 miles in 1875, 1,686 miles in 1874, 3,350 miles in 1873 and 6,311 miles in 1872.

THE DIFFERENCES IN RATES TO AND FROM NEW YORK, PHILADELPHIA AND BALTIMORE, Mr. Vanderbilt suggests, in an interview which we publish elsewhere, might be settled by reference to the merchants of those cities, as represented by their commercial exchanges. This seems to us a very good suggestion. The interest of a railroad and of the merchants at its terminus are almost identical so far as this question is concerned, though the merchants' may well be the greater, because the destruction of a certain branch of traffic at one port might utterly destroy a merchant's business, while it would deprive the railroad of but a part of its business, and perhaps a small part. But of course a settlement could be made by the three exchanges by the railroad companies them-

selves, only by *mutual agreement;* and if the question is left to them, it must be with the assurance that they will come to some agreement on a basis of rates within a reasonable time; that is, they must not keep up the railroad war indefinitely pending their negotiations. Certainly an experiment of this kind is well worth trying, if there is any prospect of thus reaching an agreement, for the differences would then be determined by the very persons most affected by them, and who best know just how far the traffic is influenced by the differences in rates. And if their discussions and arguments were put on record, even an unsuccessful attempt to determine the differences would have great value, as it would be likely to expose all the facts affecting the cost of exporting by different ports, which now are imperfectly known.

The greatest difficulties we have now in determining the effect of the agreed differences of 1876 (3 and 2 cents less per 100 lbs. to Baltimore and Philadelphia) is our ignorance of the actual rates at which grain has been carried to the several places: for we must remember that during most of the time since 1876—since 1877, at least—rates have been irregular, and it is impossible to say what differences were actually maintained at such times. Thus the fact that the distribution of grain has been satisfactory (or unsatisfactory) during this period does not prove that the agreed differences were proper (or improper).

CHICAGO RAIL SHIPMENTS EASTWARD for the week ending Nov. 12 were 51,949 tons (reported as 40,255 by the Chicago Board of Trade). Of the total actual shipments 8.7 per cent. went by the Chicago & Grand Trunk, 28.1 by the Michigan Central, 28.5 by the Lake Shore, 20.5 by the Fort Wayne, 10.2 by the Pan-handle, and 4 per cent. by the Baltimore & Ohio. These shipments were 1,281 tons less than in the week ending Nov. 5, but about one-fourth greater than in the corresponding week of last year.

For the several months of the year the rail shipments from Chicago have been, for three successive years:

	1879.	1880.	1881.
January	192,512	163,378	283,872
February	198,541	166,541	204,331
March	258,458	218,981	212,021
April	298,042	186,543	275,417
May	280,355	125,157	171,432
June	260,234	223,977	242,463
July	145,788	160,187	259,253
August	162,263	169,314	260,608
September	134,141	151,464	265,414
October	193,976	179,466	258,674
November	168,274	219,840	.....
December	179,154	244,790	.....
Total	2,471,738	2,309,640	2,413,485

The full reports for a few days of last week indicate that the shipments were then less than 50,000 tons, and the total November shipments seem likely to be less than 210,000 tons—not as much as last year in November. Hitherto, however, the rail shipments have been very much greater this year than last—44 per cent. more in October, 74 per cent. in September, 54 per cent. in August, and for the ten months ending with October 2,413,485 tons, against 1,845,010 in 1880 and 2,124,310 in 1879—an increase of nearly 25 per cent. over last year, and of 13⅜ per cent. over 1879.

For the week ending Nov. 19, the Chicago Board of Trade reports the shipments billed from the city to have been 41,771 tons, of which 4,093 tons were flour, 26,491 grain, and 10,883 provisions. The total is nearly the same as it reported for the previous week. These shipments are by no means small, but are smaller than before since the low rates were made. Of the total the Chicago & Grand Trunk took 7.2 per cent., the Michigan Central 26.1, the Lake Shore 30.4, the Fort Wayne 20.3, the Pan-handle 13.6, and the Baltimore & Ohio 2.4 per cent.

THE LONDON METROPOLITAN RAILWAY, which has something more than half of the mileage (14¾ miles) of the London underground road, in the first half of 1881 had 56 locomotives and 216 cars, and the locomotives ran on the average 13,124 miles each in the half-year and earned $29,380. The average earnings per car were $6,090. The Metropolitan District Company, which owns the other part of the circular underground line (12¾ miles) had 36 locomotives and 242 cars. The average distance run per locomotive was 12,966 miles in the half-year, and the average earnings $25,040 per locomotive and $3,940 per car, while the earnings per train-mile were $1.70, and the expenses 74 cents. The engines used weigh about 100,000 lbs., and the trains, unlike our elevated railroad trains, are large.

The train mileage of the Metropolitan in the half-year was 825,069 miles, of the Metropolitan District, 582,763 miles. This gives an average of 155 trains each way daily over the whole road on the former and 126 on the latter. But a very large proportion of the trains does not pass over the whole road, and some over only very short sections of it, so that parts are very, very much more crowded than these figures would indicate. At one time there were 440 trains each way daily over the Metropolitan Elevated in New York. Part of the London road has four tracks. Trains of each company use the road of the other, that is, trains of both run from one end to the other of the two connecting lines, which as yet do not quite make a circle, though the disconnected termini are now but a very short distance apart.

There is a considerable freight traffic over these roads. Of the entire train mileage in the first half of 1881 11 per cent. on the Metropolitan and nearly 8 per cent. on the District are by freight trains, and the total freight train mileage on them would by itself make a very fair traffic—equivalent to 14 trains each way daily over the entire length of both roads.

LAKE AND CANAL SHIPMENTS are practically at an end, though the lakes and canal are still open, and may be for a week longer. In the latter part of last week only one vessel a day was cleared with grain from Chicago, and there have been no clearances at Buffalo this week of canal boats laden with grain bound through to New York. For the canal it has been a very bad season, though the complaints of the boatmen have not been nearly so bitter and common as they have been in some years previous to 1880, the cause for which we imagine to be a greater amount of freight other than grain and bearing higher freights. The grain business certainly cannot have been satisfactory; we believe there has never before been a season when the rates on grain averaged so low; and since July the boats have been almost entirely deprived of the west-bound merchandise which they have obtained when rail rates were maintained, and which, though not very large in amount, pays much higher freights than grain in the other direction, or other ordinary canal freight.

Lake rates, though rail rates were as low as ever before, did not sink quite so low as in 1878 and 1879, and until October the average was probably higher than in any other season of railroad war. But there has never before been a fall when they were so low as they have been since September, and for years the lake shipments have not been so small at this time of the year, when usually there is great demand for all craft in order to forward as much as possible before navigation closes. This will bring down the average rate of the season materially. There was an unusual amount of freight for vessels going up the lakes from Buffalo (chiefly coal), and the rates on coal were much higher than usual—averaging, we should say, three times as high. It is probably for this reason that the vessel interest has seemed very well satisfied. At least there were very few complaints until October, when the vessels are accustomed to obtain two or three times their summer rates, but this year did not get as much.

Mr. Vanderbilt on the Railroad War.

In an interview with a reporter of the New York *Tribune* last Tuesday evening Mr. Wm. H. Vanderbilt is reported to have said:

"There is no doubt that the railroad war is a very foolish thing; but it is difficult to pick out the fools. Perhaps I am one of them; there may be others. I have studied this railroad matter pretty thoroughly and I am not sure that the railroad managers should settle this question of differential rates between the different cities on the seaboard. Of course the railroads are vastly interested in the settlement of these rates, but what affects us affects the whole community. We have done what we could with the railroads, and the question is not decided. Why should not the community, which has a deep interest in it, have a voice in determining this problem? If the railroads cannot agree upon the fair difference of rates between Baltimore and Philadelphia and New York, let the business men and the boards of trade say what advantages should be given and taken. The Central and the Erie now are fighting bitterly for the supremacy of this city. Ought not the city, the business men, to take some interest in the struggle? At any rate the railroads cannot prolong the fight forever; they are paying heavily for it now.

"But however this question of differential rates may be settled, one thing is certain: That next time it must be settled for a long time; there must be no agreement merely to be broken. The differences in favor of Baltimore and Philadelphia have been reduced many times since we first made the agreement. But they have not been observed very well at any time, and there is no use for any one to deny it. We know it, and have had to meet the rates of the other roads. I want that sort of thing to cease; I want a fair and an open rate. I have no objection to fighting a bankrupt road, if you please. All I ask is that shippers should give a solvent road the preference over a bankrupt road at the same rates. That is not too much to ask, and it ought to be perfectly fair. One thing, at any rate, is certain: That fair, open rates must be made the basis of any agreement that may be made."

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Richmond & Petersburg, annual meeting, at the office in Richmond, Va., Nov. 29, at noon.

Charlotte, Columbia & Augusta, annual meeting, in Columbia, S. C., Dec. 7.

Railroad Conventions.

The *Railway Conductors' Life Insurance Association of the United States and Canada* will hold its annual meeting at the St. Charles Hotel, in New Orleans, beginning at 10 a. m. on Dec. 7. The meeting will last probably two days.

Dividends.

Dividends have been declared as follows:

Delaware & Hudson Canal Co., 1½ per cent., quarterly, payable Dec. 10. Transfer books close Nov. 26.

Wilmington, Columbia & Augusta, 3 per cent., payable Dec. 10.

Wilmington & Weldon, 3 per cent., semi-annual, payable Dec. 14.

Union Pacific, 1¼ per cent., quarterly, payable Jan. 2. Transfer books close Nov. 30.

Lehigh Coal & Navigation Co., 2 per cent., payable Dec. 3. This is the first dividend paid by this company since Sept. 2, 1876.

A coal-boat rise in the Ohio took out from Pittsburgh on Nov. 19 boats carrying 2,052,000 bushels of coal, of which 1,618,000 bushels were for Louisville and 434,000 for Cincinnati. Up to noon of Nov. 21 there had been sent out 9,909,000 bushels, 6,547,000 for Louisville and 3,362,000 for Cincinnati.

The business of the Connellsville coke region is seriously embarrassed by want of cars. It is said to be almost impossible for the coke works to get the cars they need to fill their orders, especially for Western points.

Foreclosure Sales.

The Washington & Ohio road is to be sold at Alexandria, Va., Jan. 31, 1882, under a decree of foreclosure granted by the Virginia Circuit Court. The road was originally the Alexandria, Loudoun & Hampshire, and was reorganized under the present name after the war. It extends from Alexandria to Round Hill, 51¾ miles, and by the last report had a funded debt of $387,300.

International Road-Masters' Association.

Pursuant to the adjournment in Cincinnati last summer, the annual meeting of this Association should have been held at Cleveland, O., Nov. 16. At the appointed time, however, very few members of the Association had arrived, and no quorum been present the meeting was not held. No action as to adjournment was taken by the few who were present.

Railway Passenger & Freight Conductors' Mutual Aid & Benefit Association.

The annual meeting of this Association began in the Grand Pacific Hotel, Chicago, Nov. 16, with a large attendance, Vice-President Laughlin in the chair. President Sherwood being absent on account of sickness, his annual address was read. He alluded to the prosperous condition of the Association, now in its eighth year. A portion of the address was devoted to a consideration of the old style of insurance companies, with high prices and salaries, and the newer protection societies, where but low premiums were paid. This organization had been a greater success than had been expected, but the next generation would reap the full benefits of it.

The Committee on Credentials reported a full attendance of delegates.

At the afternoon session Mr. W. S. Sears, of the Michigan Central, made a short address of salutation, after which Secretary and Treasurer Charles Huntington made his annual report, which was unanimously adopted. The reports showed the receipts of the year to have been $51,266.95; the losses and disbursements, $50,356, and a balance of $1,248.62. Since the organization of the Association, in 1874, the total disbursements have amounted to $148,472. After a very protracted discussion on the subject, the convention voted to authorize the old board of directors to reopen the J. H. Thirkell case with power to act, and instructions to report the results of their investigation to the convention. It was then decided to telegraph the condolence and sympathy of the convention to the President of the Association, Mr. James G. Sherman, of the Michigan Central, who was ill at his home in Detroit.

On the second day several additional delegates were present. The President appointed the following delegates a committee to arrange the New Orleans excursion: Messrs. Thomas P. Robb, K. M. Mountz, C. A. Davidson, F. F. Kent, T. B. Gordon, G. Newton and John Cooper.

Then followed a lengthy discussion regarding a revision of the constitution, and a few unimportant changes were made. A motion was made to change article 4 so as to make it read: "No person shall be eligible to membership in this Association who has passed the age of 50 years," instead of 55 years, which, after some discussion, was lost.

The afternoon session was commenced with Second Vice-President E. A. Ladd in the chair. The convention at once proceeded to the annual election of officers and board of directors.

Mr. W. S. Sears was chosen to deliver the annual address next year. After passing the usual votes of thanks, Vice-President Laughlin made a farewell address and the convention adjourned.

In the evening the delegates attended a concert by special invitation, and the next day a number of them started on an excursion to New Orleans.

New York, Pennsylvania & Ohio Road-Masters' Meeting.

The annual meeting of the road-masters of the New York, Pennsylvania & Ohio road was held at Chief Engineer Latimer's office in Cleveland, O., Nov. 15. The subjects for discussion were announced by Mr. Latimer some time ago, in the following circular:

"To Road-Masters.—The annual meeting of road-masters will be held at the office of the Chief Engineer, Cleveland, Ohio, on Tuesday, Nov. 15, 1881, at 10 o'clock a. m.

"Each road-master will be expected to have a paper on three of the following questions, and be prepared to discuss all of them.

"1. Safety of Trainmen and Switchmen—What do you consider the best method or device for the prevention of accidents to trainmen and switchmen by catching their feet at guard rails, frogs and head blocks?

"2. Cattle Guards—Give your views as to the best material to use, and best form of construction of cattle guards. Give estimate of cost.

"3. Grade Crossings—What in your opinion is the best material to use, and best form of construction of grade crossings?

"4. Hand Cars—Do you consider the hand cars now in common use on this road, good? Are they repaired promptly when sent to shops? What is the proper length for a hand-car? What should be the distance between centres of wheels?

"5. Nut Locks—From your present experience, what do you consider the best nut lock?

"6. Split Switches—At what point should the moving rails of a split switch take the weight of a passing train? Should the rods be all the same length? What should the length be for a gauge 4 ft. 8½ in. with rail base of 4 in.

"7. Switch Stands—Would it be advisable to have the crank of a switch stand point upwards? Why?

"8. Washers—What thickness of iron washer would you advise to be placed between the nut and wooden washer?

"9. Miner's Switch—Give your opinion of Miner's patent switch attachment?

"10. Tools—Give your views as to the best form of tools for raising track when ballasting; for breaking and removing ice from under bridges? What do you consider the best form of track gauge, and what materials should it be made of?

"11. Fire—What is the best and most economical way to keep the right of way so as to prevent as much as possible fences burning and fires spreading? How many feet of fence have been burned on each subdivision during the past season?

"12. Fences—Are the wire fences now being used satisfactory? Are the wires close enough to turn all kinds of stock? How many wires should be used? How far apart should the wires be placed?

"13. Frogs—Are spring rail frogs as safe in winter as the rigid ones? Do you consider it proper to use plates under rail frogs? How would you construct a spring rail frog so that it should be in all respects as safe as a rigid one? Give reasons for your views?

"14. Nuts—Give your views as to the proper size and shape for a nut, and what you consider the best standard to adopt? Give reasons for your opinions.

"15. Spacing Ties under Steel Rail—What condition of road-bed, as affected by the weather, should limit you as to time of spacing ties under new steel rail?

"16. Relaying Steel Rail—In relaying steel rail taken from third rail track, would you place it the same as it was in the third rail track, or would you reverse it so that the

former running side would be on the outside, thus presenting the strong side of the head to the flange of the wheels? Would you make any difference on curves or tangents? Give reasons for your views.

"17. Joints—Do you consider we are using a first-class joint? What improvements would you suggest? Do you consider it advisable to make any change? State your reasons in support of your opinion. How would you overcome the disadvantage of having inferior bolts, that could not be tightened in a steel rail joint?"

The meeting was called to order at 10 a. m. by Mr. Latimer. There were present T. G. Armstrong and E. Collopy, First Division; John Newham, Second Division; H. Burgess and M. J. McInarna, Third Division; D. Ryan, Fourth Division; P. Bowen, Franklin Branch; P. Collopy and R. French, Mahoning Division. Joseph Newham, the other road-master on the Second Division, was absent on account of sickness.

All present expressed their views fully on the subjects before the convention. Among the interesting papers read were those of Mr. Thomas Armstroug and Mr. M. J. McInarna.

At 5 o'clock an adjournment was effected in order that the convention in a body might visit their late President, Mr. J. H. Devereux. At his office a cordial welcome was extended the visitors. Mr. Devereux, in receiving his visitors, made a brief speech, in which he referred to the close relations which had existed between himself and the road-masters, the cordial support he had always received from them, and the regret he felt at parting.

At 7 o'clock the road-masters again met to finish their labors. Final adjournment was had at 10.15, after a very satisfactory meeting.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio.—At the annual meeting in Baltimore, Nov. 21, the old board was unanimously re-elected, as follows: Wm. F. Burns, Robert Garrett, John Spear Nicholas, John Gregg, William W. Taylor, Samuel Kirby, James Carey Coale, G. A. Von Lingen, Decatur H. Miller, Joshua G. Harvey, George W. Dobbin, Henry C. Smith.

Carolina Central.—The board of directors has been reorganized, and is now as follows: John A. Oates, Charlotte, N. C.; James A. Leak, Wadesboro, N. C.; D. R. Murchison, Charles M. Stedman, Wilmington, N. C.; R. S. Tucker, John C. Winder, Raleigh, N. C.; W. W. Chamberlain, Norfolk, Va.; R. C. Hoffman, John M. Robinson, Baltimore.

Chicago & Grand Trunk.—Mr. Ralph Brownell is appointed Assistant Engineer, with office at Battle Creek, Mich.

Chicago & Northwestern.—Mr. Charles H. Knapp is appointed Division Freight Agent of the Chicago, Milwaukee & Northwestern Division, in place of Charles V. McKinlay, resigned.

Chicago, Burlington & Kansas City.—The directors of this company are: John B. Lyon, Chicago; James F. Joy, Detroit; W. W. Crapo, W. J. Rotch, New Bedford, Mass.; J. N. Denison, Wm. Endicott, Jr., Sidney A. Kent, Elijah Smith, Prosper W. Smith, Boston.

Chicago, Burlington & Quincy.—General Manager Potter has issued the following circular relating to the lines west of the Missouri (the Burlington & Missouri River in Nebraska):

"Mr. G. W. Holdredge, General Superintendent, will have direction of the business affairs of this company, with headquarters in Omaha. He will attend to the business connected with the General Manager's office. Heads of departments will report to him. Mr. Geo. H. Harris, General Freight Agent, will be second in command."

Chicago, Streator & Bloomington.—The directors of this new company are: F. Plumb, John B. Plumb, Nelson Plumb, Streator, Ill.; Jay Baker, A. E. Tyler, Bloomington, Ill.; B. S. Buell, Rochester, N. Y.; George Trumbull, New York.

Cleveland, Tuscarawas Valley & Wheeling.—Mr. Wm. Thornburg is appointed Superintendent. He was recently on the Ohio Central road.

Columbia & Greenville.—At the annual meeting in Columbia, S. C., Nov. 17, the following were chosen: President, R. L. McCaughrin; directors, Hamlin Beattie, Joseph Bryan, W. P. Clyde, James Conner, James Cothran, W. A. Courtney, James H. Dooley, A. C. Haskell, T. M. Logan, Wm. H. Palmer, Frederick R. Scott, H. C. Suber. The road is controlled by the Richmond & Danville.

European & North American.—At the annual meeting in Bangor, Me., the following directors were chosen: Sprague Adams, N. C. Ayer, S. H. Blake, H. N. Fairbanks, John S. Ricker, Charles P. Stetson, Thomas J. Stewart, F. A. Wilson, Noah Woods. The board re-elected Noah Woods President and Treasurer; F. W. Cram, Superintendent; J. F. Leavitt, Clerk and General Passenger Agent.

Fitchburg.—Mr. W. I. Fox has been appointed Train-Master of the Vermont & Massachusetts Division, with office in Springfield, Mass. Mr. Fox was recently Yard-master on the Troy & Greenfield road.

Illinois Midland.—Mr. E. D. Frost is appointed General Superintendent, with office in Terre Haute, Indiana.

Indianapolis Belt.—Mr. E. A. Cooper has been appointed Superintendent, in place of Albert Scott, resigned.

Hannibal & St. Joseph.—The new board has elected the following officers: President, William Dowd; Vice-President, John R. Duff; Secretary, John A. Hilton; Treasurer, Walter J. Hilton.

McComb, Deshler & Toledo.—Mr. Ira B. Conine has been appointed Receiver of this short Ohio road.

Milwaukee, Lake Shore & Western.—The Milwaukee *News and Republican* says: "The appointments on the Milwaukee, Lake Shore & Western road have now been definitely decided upon. Mr. Donahue, until now Assistant Superintendent of the road, will take the position of Superintendent, while Mr. Hayden, until now Train Dispatcher, will at an early day take the position of Assistant Superintendent of the Southern Branch of the road, while Mr. Dave Curtis, until recently conductor on the Chicago & Northwestern road, between Milwaukee and Fon du Lac, will take charge of the Northern Division of the road, with headquarters at Oshkosh. Mr. Curtis is one of the best known railroaders in the state, having been engaged with Wisconsin roads during the greater portion of his life. Mr. Donahue was concerned in the construction of the old Sheboygan & Fond du Lac road, and made quite a reputation at that time as a railroader.

"Mr. Harry Reed, until now Assistant Train Dispatcher, will go in as Train Dispatcher of the road. A number of other unimportant changes in several of the other departments will also go into effect soon."

Naugatuck.—At the annual meeting in Bridgeport, Nov. 16, the following directors were re-elected: E. F. Bishop, W. D. Bishop, R. Tomlinson, Bridgeport, Conn.; R. M. Bassett, Derby, Conn.; Frederick J. Kingsbury, Waterbury, Conn.; J. G. Wetmore, Winsted, Conn.; H. Bronson, J. B. Roberson, New Haven, Conn.; A. L. Dennis, Newark, N. J. The board re-elected E. F. Bishop President; Horace Nichols, Secretary and Treasurer; Samuel Wilmot, Auditor; George W. Beach, Superintendent.

New York, Pennsylvania & Ohio.—At a meeting of the board held Nov. 17, in Cleveland, Robert Harris and C. C. Waite were chosen members of the Executive Committee in place of P. D. Cooper and S. L. Mather. Mr. Harris is Vice-President and Mr. Waite Assistant to the President of the New York, Lake Erie & Western. The Executive Committee now consists of Messrs. Jarvis M. Adams, John Tod, J. F. Clark, Robert Harris and C. C. Waite.

The following circular from General Manager P. D. Cooper is dated Nov. 21: "Mr. J. M. Ferris, Superintendent of the Mahoning Division, has, in addition to his present duties, been appointed Superintendent of Transportation of this company's lines. He will have the charge and direction of the freight and passenger equipment of the road. His orders will be obeyed and respected accordingly.

"Mr. N. F. Wood has been appointed Assistant Superintendent of the Mahoning Division."

New York, Lake Erie & Western.—Mr. W. B. Coffin is appointed Superintendent of the Western Division (Hornellsville to Dunkirk) in place of Mr. John S. Beggs. It is understood that Mr. Beggs will remain in the service of the company. Mr. Coffin has been Road-Master of the Susquehanna Division.

The Buffalo & Southwestern road, heretofore attached to the Western Division, has been made a separate division, as the Buffalo & Southwestern Division. Mr. Charles A. Brunn is made Superintendent of the new division.

Old Colony.—At the annual meeting in Middleboro, Mass., Nov. 22, the following directors were chosen: Charles F. Choate, Cambridge, Mass.; Frederick S. Ames, Easton, Mass.; John J. Russell, Plymouth, Mass.; Royal W. Turner, Randolph, Mass.; George Marston, New Bedford, Mass.; Samuel S. Crocker, Taunton, Mass.; Thomas J. Borden, John E. S. Brayton, Fall River, Mass.; Elisha W. Willard, Newport, R. I.; Samuel C. Cobb, Uriel Crocker, Francis B. Hayes, Boston.

Port Royal & Augusta.—At the annual meeting last week the following directors were chosen: D. C. Wilson, Beaufort, S. C.; John W. Greene, Augusta, Ga.; J. J. Gresham, Macon, Ga.; George S. Owens, W. G. Raoul, William M. Wadley, Savannah, Ga.; D. F. Appleton, H. H. Boody, Adrian Iselin, New York. A majority of the new directors are connected with the Central Railroad, of Georgia, Mr. Wadley being President and Mr. Raoul Vice-President of that company.

The board subsequently elected W. G. Raoul President; Edward McIntyre, Secretary and Treasurer.

Richmond, Fredericksburg & Potomac.—At the annual meeting in Richmond, Va., Nov. 16, the following were chosen: President, J. P. Brinton; directors, John S. Blackburn, Isaac H. Carrington, Charles Chauncy, A. Sidney Biddle; Secretary and Treasurer, J. B. Winston. Dr. L. B. Anderson is state director.

Springfield & Memphis.—The officers of this company are: President, George H. Nettleton; Treasurer, Charles Merriam, Boston; Secretary and Assistant Treasurer, J. S. Ford, Kansas City, Mo. This is the company which is building the Kansas City, Ft. Scott & Gulf's extension to Memphis.

Tennessee & Sequatchie Valley.—The officers are: President, E. D. Albro; Vice-President and General Manager, Isaac Brittin; Secretary, W. H. Justis; Treasurer, G. L. Banning; Chief and Consulting Engineer, J. P. Bouscaren.

Texas & Pacific.—The Shreveport (La.) *Standard* reports that Mr. W. H. Newman, now General Freight Agent, is to be General Superintendent. The office is now vacant.

Mr. Wm. Davis is appointed Superintendent of the Western Division. He was recently on the Galveston, Harrisburg & San Antonio road.

Valley, of Virginia.—At the annual meeting in Staunton, Va., recently, Mr. S. Spencer was re-elected President, with the old board of directors.

Watertown & Waterbury.—This company last week re-elected W. D. Bishop President; L. W. Cutler, Secretary and Treasurer. The road is worked by the Naugatuck Company.

PERSONAL.

—Mr. Albert Scott has resigned his position as Superintendent of the Indianapolis Belt road.

—Mr. Edward Valiant, for the last six years General Western Traveling Agent of the White Line, has resigned on account of ill-health.

—Mr. George Coykendall has resigned his position as Superintendent of the Uister & Delaware road, and will engage in other business.

—Mr. Henry I. Vanners, who is a conductor on the New York & New England road, is said to be the only colored conductor in this country.

—Mr. Charles V. McKinlay, Division Freight Agent on the Chicago & Northwestern road, has resigned, and will accept a position on the new Wheeling & Lake Erie road.

—It is reported that Mr. Martin V. Heller, long Agent at Port Jervis, N. Y., on the New York, Lake Erie & Western road, will be appointed Superintendent of the Rochester Division.

—Mr. Thomas W. Spencer, of Utica, N. Y., recently Chief Engineer of the Herkimer, Newport & Poland road, has accepted a position on the New York, West Shore & Buffalo road.

—Mr. John C. Bailey, an old and well-known citizen of Orange, N. J., died in that town Nov. 22. He was one of the first projectors and original stockholders of the Morris & Essex Railroad.

—Mr. Wm. Wister, an old citizen and manufacturer of Philadelphia, and for many years Treasurer of the North Pennsylvania Railroad Company, died at his residence in Belfield, Pa., Nov. 19, aged 77 years.

—It is reported that Mr. A. B. Starr is to succeed Mr. Griscom as Superintendent of the Eastern Division of the Pittsburgh, Ft. Wayne & Chicago. Mr. Starr is now Superintendent of the Sunbury Division of the Philadelphia & Erie.

—Mr. John Marquis, for 10 years past Superintendent of the Pittsburgh, Ft. Wayne & Chicago shops in Allegheny, Pa., died at his residence in that city Nov. 15, aged 55 years. He had been in the employ of the road 25 years.

—Mr. E. B. McClure, formerly Superintendent of the Indianapolis & St. Louis road, died very suddenly in Mattoon, Ill., Nov. 17, aged 50 years. For some time past he has been connected with the construction of the proposed Indianapolis & Springfield road.

—Mr. A. L. Willoughby died in Mobile, Ala., Nov. 12, aged 45 years. He was born in Lowell, Mass., and went to Mobile when a young man. He entered the service of the Mobile & Ohio Company as a clerk in 1858 and afterward was made General Ticket Agent, and finally Secretary and Treasurer. The last-named office he held until 1879, when he was obliged to give up business by a stroke of paralysis, of which disease he finally died.

—Mr. George Law, formerly well known as a capitalist and politician, died in New York, Nov. 18, aged 75 years. Mr. Law began life as a mason and contractor and had some important canal and railroad contracts. Later he was engaged in the shipping business, owning many vessels, and was for a time one of the chief owners of the New York & Harlem road. He was the largest stockholder in the Eighth and Ninth Avenue street roads in New York. He retired from active business some years ago.

—The Pittsburgh *Telegraph* of Nov. 19 says: "Mr. John P. Levan, General Foreman of the car shops of the Pennsylvania Railroad Company at Altoona, celebrated the thirtieth anniversary of his connection with that company yesterday, and the occasion was a very remarkable one. Mr. Levan held a levee throughout the day, and was called upon by the employés and officers of the road. In a letter addressed to the general officers of the company, Mr. Levan speaks feelingly of his connection with the railroad. He was the first apprentice indentured to the company when the shops were removed to Altoona in 1852. Ten years later he was appointed foreman with 96 men employed in the shops. Now the number is 1,635. In 1862 there were 69 passenger cars, but the number now runs up to 620. Mr. Levan assisted in the building of the first passenger car and the first special car, and has labored under all the presidents and general officers the company ever had, and has enjoyed their good will and co-operation. In the evening the workmen presented their foreman with a congratulatory address."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1881.	1880.	Inc. or Dec.	P.c.
Ten months ending Oct. 31:				
Ala. Gt. Southern.	$622,364	$521,906	I. $100,458	19.2
Cairo & St. L.....	346,467	336,663	I. 9,804	2.9
Houston, E. & W. Tex.....	125,400	81,741	I. 43,659	53.2
Mem., Pad. & No.	198,313	172,886	I. 25,427	14.7
Nash., Chatta. & St. L.....	1,750,070	1,691,340	I. 58,730	3.5
Month of October:				
Ala. Gt. Southern.	$80,869	$67,649	I. $13,220	19.4
Cairo & St. Louis..	40,587	43,544	D. 2,957	6.7
Central Iowa.....	87,913	101,735	D. 13,822	13.6
Cin., Ham. & Dayton.....	274,030	270,686	I. 3,344	1.2
Houston, E. & W. Tex.....	18,861	8,555	I. 10,306	119.8
Mem., Pad. & No.	24,967	23,545	I. 3,422	14.5
Nash., Chatta. & St. L.....	172,121	178,266	D. 6,145	3.4
N. Y. & N. England	259,522	215,491	I. 44,032	20.5
Phila. & Reading.	1,989,948	1,746,298	I. 243,650	14.0
First week in November:				
Cin. & Eastern Ill.	$36,244	$33,641	I. $2,603	7.7
N. Y. & N. Engl...	63,443	56,449	I. 6,994	12.4
Wab., St. L. & P.	367,653	317,145	I. 50,508	15.9
Second week in November:				
Chi., Mil. & St. P..	$362,000	$352,408	I. $9,592	2.7
Chi. & N. W.....	448,800	433,800	I. 15,000	3.5
Chi., St. P., Minn. & O.....	86,621	79,129	I. 7,492	8.5
Denver & R. G....	117,540	95,397	I. 22,143	23.3
N. Y. & N. Engl...	56,932	48,979	I. 7,953	16.2
Northern Pacific..	94,984	70,192	I. 24,792	35.4
St. L. & San Fran.	62,100	72,300	D. 10,200	14.2
St. P., Minn. & Man.....	130,600	70,500	I. 60,100	85.2
Week ending Oct. 29:				
Grand Trunk.....	£46,738	£51,501	D. £4,763	9.2
Week ending Nov. 11:				
Great Western....	$102,085	$110,270	D. $8,185	7.4
Week ending Nov. 12:				
Chi. & Gd. Trunk.	$38,858	$37,259	I. $1,599	4.3

Chicago and Milwaukee Receipts.

For the three weeks ending Nov. 21 receipts have been for four years:

	1878.	1879.	1880.	1881.
Chicago:				
Grain, bu.....	6,745,117	6,007,902	8,434,514	5,627,859
Flour, bbls.....	240,177	289,966	333,225	194,344
Hogs, No.....	591,105	533,269	691,640	526,920
Milwaukee:				
Grain, bu.....	1,882,841	2,174,976	1,766,701	755,464
Flour, bbls.....	157,480	176,042	225,459	204,805
Hogs, No.....	92,052	90,191	102,079	86,771

The receipts of everything, excepting flour at Milwaukee, are smaller this year than in any of the three previous. Taking flour and grain together, the receipts of both classes for the three weeks have been:

	1878.	1879.	1880.	1881.
Bushels.....	10,417,414	10,789,914	12,715,290	8,182,493

This year the receipts are 36 per cent. less than last year, 24 per cent. less than in 1879, and 21½ per cent. less than in 1878. The average daily receipts of grain alone at both places in September, October, and in each of the three weeks of November, have been:

	Average daily receipts.				
	Sept.	Oct.	Nov. 1-7.	Nov. 8-14.	Nov. 15-21.
1881.....	736,519	551,752	413,194	363,618	287,075
1880.....	772,316	878,438	651,114	536,722	512,366
Decrease....	35,797	326,686	237,920	173,104	225,291
P. c.....	5.0	59.2	47.6	47.6	78.5

The decrease in receipts was thus larger, proportionally, than in any of the other periods. A decrease from week to week and from month to month is to be expected, and occurred last year, and will probably continue, as in other years, until after navigation is closed; but it has been greater than usual this year, indicating that the cause which has limited the farmers' shipments—whether it be a short supply of grain or an indisposition to dispose of it at current prices—continues to operate.

Closing the New York Canals.

Canal Superintendent Dutcher announces that, unless sooner closed by ice, the Black River Canal will be closed Nov. 24, and the Erie, Champlain, Oswego and Cayuga & Seneca canals Dec. 8.

Traffic of New York Canals.

For the week ending Nov. 14 the Canal Auditor reports for all the New York canals as follows:

	1881.	1880.	Decrease.	P.c.
Tons shipped	164,591	233,010	68,419	29.4
Miles cleared by boats	180,234	332,890	152,656	46.0
Tolls	21,269	47,533	26,264	55.3

Since navigation opened, compared with last year, there has been a decrease of 21 per cent. in tons shipped, of 37½ per cent. in miles cleared by boats, and of $454,443, or 44⅝ per cent., in tolls collected.

Some principal items of freight shipped in the second week of November were:

	1881.	1880.	Inc. or Dec.	P. c.
Lumber	47,250	40,803	Inc. 6,447	15.8
Grain	43,776	114,401	Dec. 70,625	61.9
Iron and iron ore	15,019	10,287	Inc. 4,732	46.0
Coal	27,498	22,473	Inc. 5,025	22.4
Sugar and molasses	1,132	1,132	Dec. 1,132	100.0

The grain shipments were rather larger than smaller than has been usual this year, and the great decrease was due to the fact that the last year's shipments were extraordinarily large. The canal authorities announce that it will be closed Dec. 8 this year, if not frozen up sooner. Last year it was closed by ice Nov. 21.

Tobacco Rates.

The rates to New York which took effect Nov. 21 are: East St. Louis and other Mississippi River points as far north as Rock Island, 41½ cents per 100 lbs.; Cairo, 43 cents; Louisville, Jefferson and New Albany, 33 cents; Cincinnati, 30 cents. The Louisville & Nashville and the Chesapeake & Ohio will maintain a difference of 5 cents per 100 lbs. on uninsured and 3 cents on insured bills of lading, except from Evansville, from which insured bills will not be given; and on business by packets from all points below Louisville the Chesapeake & Ohio will not issue insured bills of lading.

New England Railroad Returns.

The following are from reports made to the Railroad Commissions of Connecticut and Massachusetts for the year ending Sept. 30:

	Earnings.	Expenses.	Net earnings.
Boston & N. Y. Air Line	$282,533	$136,417	$146,116
1880	286,892	125,180	161,712
Danbury & Norwalk	195,163	106,822	88,341
1880	183,494	124,327	59,167
Hartford & Conn. Valley	191,926	168,949	22,977
1880	194,414	160,458	33,956
Hartford & Conn. Western	266,725	256,598	10,147
1880	238,810	217,207	21,603
Housatonic	754,513	559,365	195,148
1880	740,998	493,713	247,285
New London Northern	611,073	386,090	224,983
1880	546,553	412,316	134,237
N. Y., Prov. & Boston	957,718	502,533	455,185
1880	779,885	435,195	344,690
Worcester & Nashua	610,874	453,574	157,300
1880	553,592	369,100	184,492

Chicago Through to Jacksonville.

The first through sleeper for Jacksonville, Fla., left the Illinois Central depot yesterday morning. This sleeper runs by the Kankakee Line to Cincinnati, thence by the Cincinnati Southern to Chattanooga, thence over the Western & Atlantic to Atlanta, thence over the Central, of Georgia, to Macon, thence over the Macon & Brunswick to Jesup, and thence over the Savannah, Florida & Western to Jacksonville. The time from Chicago to Jacksonville is made in exactly 48 hours. This will no doubt be the favorite line to Jacksonville during the winter.—*Chicago Tribune.*

Coal Movement.

The coal tonnages for the week ending Nov. 12 are reported as follows:

	1881.	1880.	Increase.	P. c
Anthracite	635,472	513,138	122,334	23.9
Semi-bituminous	124,874	90,599	34,275	37.8
Bituminous, Penna.	60,267	45,292	14,975	33.1
Coke, Penna.	46,205	40,627	5,668	14.0

Anthracite trade continues very active. Clearfield and Cumberland shipments are limited only by the supply of cars.

The *Engineering and Mining News* estimates that there are in use about 150,000 cars built especially for carrying coal, besides flat and other cars in which coal is occasionally loaded.

The official accountant's statement of anthracite tonnages for October and the ten months, differing somewhat in form from the weekly statements, is as follows:

	October.		Ten months.	
	1881.	1880.	1881.	1880.
Phila. & Reading	678,052	614,852	5,616,403	4,879,286
Lehigh Valley	549,562	442,023	4,575,346	3,559,433
Central, of New Jersey	379,677	361,462	3,317,801	2,839,145
Delaware, Lacka. & Western	411,266	346,654	3,539,593	2,877,055
Del. & Hudson Canal Co.	290,078	236,047	2,590,133	2,151,395
Pennsylvania R.R.Co	198,407	221,929	1,835,692	1,530,013
Pennsylvania CoalCo	144,878	116,481	1,182,499	904,852
N. Y., Lake Erie & Western	34,133	39,362	389,950	324,550
Total	2,686,053	2,378,810	23,047,417	19,065,719

Increase for the month, 307,243 tons, or 12.9 per cent.; for the ten months, 3,981,698 tons, or 20.8 per cent. For the month all the companies show an increase except the Pennsylvania Railroad and the New York, Lake Erie & Western; for the ten months all show gains.

The stock of coal on hand at tidewater shipping points Oct. 31 was 474,904 tons, as compared with 613,958 tons Sept. 30, a decrease of 139,052 tons, or 22.6 per cent., during the month.

Grain Movement.

For the week ending Nov. 12 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Year.	Northwestern receipts.	Northwestern shipments. Total.	By rail.	P. c. by rail.	Atlantic receipts
1874	2,584,330	2,537,220	297,809	11.8	2,736,146
1875	3,213,054	3,419,362	1,143,631	33.5	4,057,502
1876	2,916,023	3,739,754	1,372,271	36 7	3,663,490
1877	3,676,648	4,147,443	426,584	10.3	4,077,068
1878	4,669,154	4,268,616	732,892	17.1	4,851,146
1879	3,918,084	2,978,882	1,106,435	37 1	5,798,781
1880	5,685,595	5,039,996	1,767,414	35.1	7,323,425
1881	3,907,872	3,688,621	1,718,713	46.6	3,772,654

The receipts of the Northwestern markets for the week are the smallest for four years, but nearly the same as the week before this year. The shipments of these markets, though 27 per cent. less than last year, were 24 per cent. more than in 1879, when the week's shipments were exceptionally small, though the season's shipments were much larger than this year. The shipments are a little greater than the week's before, and there have been three weeks since navigation opened when shipments were smaller. The rail shipments, however, are the smallest since June 17, when the rate was reduced to 15 cents. The Atlantic receipts were smaller in the corresponding weeks of 1874 and 1876 only in the eight years; and last year the receipts were almost twice as great. They were a little less than the week before, but about equal to the average since September.

Of the Northwestern receipts this year, Chicago had 50.9 per cent., St. Louis 13.2, Peoria 10.5, Duluth 7.8, Milwaukee 5.8, Toledo 5.4, Detroit 3.6, and Cleveland 2.9 per cent.

Since May, Chicago has not had so small a percentage of the whole.

Of the Atlantic receipts New York had 62.9 per cent., Boston 9.4, Baltimore 9.3, Philadelphia 8.1, Montreal 6.9, New Orleans 3 and Portland 0.4 per cent. New York's receipts are the largest for five weeks, and likewise its percentage of the whole. Montreal's receipts begin to disappear, as usual, at this season. Philadelphia shows some gain over the four preceding weeks, but Baltimore's receipts, with two exceptions, are the smallest of the year.

Exports from Atlantic ports for five successive weeks have been:

	Week ending. Nov. 16.	Nov. 9.	Nov. 2.	Oct. 26.	Oct. 19.
1881:					
Flour, bbls.	80,671	42,202	39,620	58,500	53,579
Grain, bu.	2,473,746	1,841,120	1,898,906	2,761,643	2,352,219
1880:					
Flour, bbls.	112,022	130,806	92,893	75,575	107,596
Grain, bu.	4,692,963	4,701,048	5,072,436	5,302,054	5,800,518

There is a considerable increase in the last week this year over two previous weeks, but the exports are still only about half as great as last year, and for the eight weeks ending with Nov. 16 there is this year a decrease of 351,568 barrels of flour (42¼ per cent.), and 22,757,444 bushels of grain (54 per cent.) Including flour there is a decrease in these eight weeks of nearly 16,000,000 bushels in wheat alone.

For the week ending Nov. 18 receipts and shipments at Chicago and Milwaukee were:

	Receipts. 1881.	1880.	Shipments. 1881.	1880.
Chicago	1,621,113	2,568,335	1,637,539	2,886,490
Milwaukee	282,548	662,260	107,139	283,266
Both	1,903,661	3,230,595	1,744,678	3,169,756

Taking the two together there was a decrease of 1,326,934 bushels (40 per cent.) in receipts, and of 1,425,078 bushels (45 per cent.) in shipments. The shipments were but little less than the receipts, though very little went forward by lake.

Receipts and shipments at Buffalo for the week ending Nov. 18 were:

	Receipts. 1881.	1880.	Shipments. 1881.	1880.
By water	1,295,400	3,312,500	531,300	4,151,700
By rail	545,400	596,200	808,600	1,692,400
Total	1,840,800	3,908,700	1,339,900	5,844,100

The lake receipts are 2,017,100 bushels (51 per cent.) less than last year, and the rail receipts nearly as great; the canal shipments are 3,620,400 bushels (87 per cent.) less than last year, and the rail shipments 883,800 bushels (53 per cent.) less. The canal was closed by ice at the end of the following week last year.

Receipts at four Eastern ports for the week ending Nov. 18 were:

	New York.	Boston.	Phila.	Baltimore.	Total.
1881	2,701,154	469,237	247,640	272,707	3,690,738
P. c. of total	73.2	12.7	6.7	7.4	100.0
1880	4,146,523	483,575	719,200	1,405,993	6,755,291
P. c. of total	61.4	7.2	10.6	20.8	100.0

While New York received a third less than last year and Boston nearly the same amount, Philadelphia's receipts were little more than a third as great and Baltimore not one fifth.

Freight Steamships to California.

The first freight steamer to engage in the interoceanic trade has arrived at San Francisco. The "Monarch" left Barrow, England, on the 31st of August, and stopping to take in coal at Cape Verde Islands and at Coronel, on the west coast of South America, arrived at San Francisco on the 8th inst., having been 69 days on the passage. She had on board as freight about 2,000 tons of steel rails, and the reason for her entrance into the trade was the desire of some of the railroad builders on the Pacific slope to get the equipments they needed as speedily as possible. The rate at which the shipment might have been made by a sailing vessel would have been not over $5 per ton, but in this case it is understood that $16.75 was paid, thus making the entire shipment cost, when landed, over $20,000 more than would have been the case under ordinary conditions. It is obvious that charters such as this cannot often be made. The saving in time, taking the average length of the voyage when made under sail, was less than two months, and usually railroad contractors can look far enough ahead in their work to avoid saving time at such an extravagant price. The "Monarch" was chartered before she arrived in San Francisco to carry a load of grain to Liverpool at £3 17s. 6d. per ton, a rate only a trifle over that paid to sailing vessels at the time the contract was made. Premising that the steamer carries the same weight of grain that she has of rails, her gross freight money would amount to about $72,000 for the round voyage. Out of this it is necessary to deduct the money paid for coal, and assuming that she consumed 25 tons of fuel each day, which would cost when put on board not less on an average than $10 per ton—which is not a high valuation considering that the coal was taken in large part at outlying stations—and that she steamed on the round voyage 128 days, this would amount to $32,000, leaving $40,000 for ordinary running expenses and profits. On the other hand, a sailing vessel which carried an equal amount of cargo would, with freight rates as they have been, obtain for making the same round trip $22 per ton, which would give a gross freight of $44,000, or 10 per cent. more than the sum made by the steamer after deducting coal charges. The saving to the steamer would be that she could certainly make five round voyages while a sailing vessel was making three. But it must be remembered that steamers are not likely to have the same favorable outward freight offered to them again. If they can only command 2s. 6d. more per ton than sailing vessels in carrying a perishable article like grain from San Francisco, it is safe to assume that as a rule they will not get much more than the slower craft for carrying steel rails or other outward cargo. From all this the natural conclusion to be drawn is that for the present steamers cannot profitably compete with sailing vessels on such a long route as that between California and Europe. The inhabitants of the Pacific slope are strongly desirous that such a trade should be built up, but until the Panama Canal is completed, or a great improvement in marine engines is made, their wishes are hardly likely to be realized.—*New York Times.*

OLD AND NEW ROADS.

Alabama Central.—At a meeting held in Selma, Ala., Nov. 17, the stockholders voted to ratify the agreement for the sale of the road to the East Tennessee, Virginia & Georgia Company. The road has been operated by that company for several months.

Allegheny Central.—At a meeting held Nov. 18, the stockholders voted to approve an agreement of consolidation with the Olean and the Friendship Railroad companies, whose lines will connect with its recently completed road.

Atlantic, Mississippi & Ohio.—In Richmond, Va., Nov. 18, the United States Circuit Court made an order directing the payment from the purchase money of this road of the remaining amount due on the consolidated bonds, amounting to $275,000, with about six months' interest. There will still remain in the custody of the Court a sum sufficient to pay the remaining claims which have not yet been finally passed.

Baltimore & Ohio.—A dispatch from Philadelphia, Nov. 21, says: "It was announced this morning, from an authoritative source, that President Garrett, of the Baltimore & Ohio Railroad Company, had abandoned the purchase of the Spruce & Pine Street Railway charter. Lawyers who have examined the rights guaranteed in the instrument state it does not cover certain objections that would be raised to it. If the sale had been made to Mr. Garrett at the figures he offered last winter ($250,000), it is stated that he would have run the risk of its availability for the purposes desired. Eminent counsel have now examined it, and some of them are so pronounced against its value for the purposes desired that Mr. Garrett has abandoned its purchase."

Burlington & Missouri River in Nebraska.—The Eastern Extension of the Republican Valley line is now completed to Table Rock, Neb., the Atchison & Nebraska crossing, 31 miles eastward from Wymore and 138 miles from Red Cloud. Only about 15 miles of track are yet to be laid between Table Rock and Calvert to complete the extension.

On the western end of the Republican Valley the track is now 50 miles west of Culbertson and 232 miles from the main line at Hastings. Work is progressing steadily.

Cannon River.—The St. Paul *Pioneer-Press* says: "Mr. Stickney has signed a contract with the Cannon River Improvement Company to build a railroad from Red Wing *via* Cannon Falls, Faribault and Waterville to Mankato. This company was originally organized to construct slack-water navigation on the Cannon River and thence by way of Lake Elysian to the Minnesota River near Mankato. It received a grant of 300,000 acres of swamp-land for this purpose by act of March 2, 1865; but a few years ago the company was authorized to apply the grant to the construction of a railroad on the general route of the abandoned slack-water navigation project. It is understood that it is designed to make this road a branch of the Minneapolis & St. Louis, with which it will connect at Waterville."

Central Vermont.—In St. Albans, Vt., last week, Messrs. Walker, Rowell and Dillingham, special masters appointed by the Court of Chancery, in obedience to the mandate of the Supreme Court, in the case of James R. Langdon and others *vs.* The Vermont & Canada Railroad Company and others, "to ascertain and report the amount due of principal and interest on all the bonds issued and negotiated by the receivers as such, and the consideration upon which they are held; the kind and value of the property pledged to secure the payment of each of the different classes of said bonds, and its present value; the amount received, from the car service pledged to secure them, and how the money received on account of said car service has been used and appropriated; the amount due on account of the floating debt; what proportion of said debt has been contracted for, or has grown out of the necessary expense of running and operating and maintaining said roads and property," filed their report. They find the amount of the various equipment and trust loans outstanding to be $4,357,000, all sold at par by the managers, except $1,008,600 of income and extension bonds, which were sold at 90. All the bonds except the Stanstead, Shefford & Chambly bonds, of $444,400, are at 8 per cent., and these at 7 per cent. No interest has been paid since May, 1876, since which time the earnings of the equipment pledged to secure their payment have been expanded to reduce the floating debt and for working expenses. The present value of the special security pledged for the payment of these bonds is found to be about $1,500,000. The floating debt is found to be $955,052.14, which the masters find was incurred for the necessary purposes of the trust in the management and operation of the roads. The claim of the Grand Trunk Company, presented and proved before the masters, is $557,973.69, which is in the form of acceptances and open accounts, and represents traffic balances on through business to and from the West. The masters find that the issuance of the income and extension bonds at 90 in 1872 was an act done by the managers in prudence and good faith. Also, that the Central Vermont Railroad Company has acted prudently and in good faith in respect to the use of the earnings of the roads and their equipment, although the earnings since 1876 have been devoted to the floating debt, rents and running expenses of the roads, instead of the payment of interest on the bonds. The sinking fund, made up of the earnings of the equipment specially pledged for the payment of the different equipment loans, though not kept in a separate form, has been properly credited on the general books. On the Stanstead, Shefford & Chambly road, of which the trust holds the stock, there are outstanding first mortgage bonds to the amount of $150,000, at 5 per cent. interest, which would have to be paid to give an unincumbered title to the property. The net earnings of this road since it came into the hands of the trust have amounted to about $217,000. The Vermont & Canada Railroad Company assented to the various leases of other roads and the contracts connected therewith which have been made. The report covers 52 pages of printed matter, and contains a large amount of matter not above abstracted, but this is either detail which is not of public interest or a reiteration of what has previously been published. A hearing is appointed for Nov. 26 upon this report before Chancellor Royce at St. Albans. In any event, however, the case will certainly be appealed to the Supreme Court.

Chesapeake & Ohio.—This company's Elizabeth, Lexington & Big Sandy road is now completed through from Lexington, Ky., to the Big Sandy River, on the West Virginia line. The road is in all 130.6 miles long, of which 34 miles on the Lexington end have been completed for several years, and 8 miles on the Eastern end for about a year.

Chicago & Northwestern.—This company has recently opened several new extensions. The James River Branch of the Chicago & Dakota line was last week opened from Redfield, Dak., north to Ordway, 50 miles, through the James River Valley.

Two branches have just been completed from Carroll, Ia., on the Iowa Division. One runs from Carroll due south to Manning, 17 miles, and is to go near to Harlan. The other runs southwest into Shelby County 35 miles, and its final destination is Audubon.

The Menominee River Branch is now completed to the Brule River, the line between Michigan and Wisconsin, 4⅛ miles beyond the late terminus at Florence.

Chicago, Milwaukee & St. Paul.—This company has now nearly completed its new branch from Mazomanie, Wis., to Sauk City, nine miles, and expects to have trains running on it by the end of the year.

The company has lately built a spur two miles long from Waterloo, Wis., to Portland in Dodge County, where there is a large stone quarry.

Cincinnati & Eastern.—At a meeting held in Cincinnati, Nov. 21, the stockholders voted to increase the capital stock from $500,000 to $2,000,000, and also to authorize an issue of bonds, for the purpose of extending the road to Portsmouth, with a branch from Brush Creek to Gallipolis.

Cleveland, Delphos & St. Louis.—This company is now engaged in building a railroad from Delphos, O., to Cleveland, about 150 miles. About 50 miles of the road, from Delphos eastward to Carey, is well advanced, and work is in progress from Carey towards Medina, 80 miles further. The company expects to begin work at Cleveland next spring, and to have the road finished next year. The intention is to build the road in a substantial manner.

Cleveland, Mt. Vernon & Delaware.—The bondholders, who bought this road at foreclosure sale, have nearly completed arrangements to organize a new corporation. It is understood that the new company will proceed at once to complete the Dresden Branch, which was graded several years ago. It is possible also that a short extension may be built from Hudson, O., to a junction with the New York, Pennsylvania & Ohio road.

Cumberland & Ohio, Northern Division.—This road, which is leased to the Louisville, Cincinnati & Lexington, and has passed with that road under Louisville & Nashville control, is now completed to Bloomfield, Ky., 10.1 miles beyond the late terminus at Taylorsville, 26.4 miles from the starting point at Shelbyville and 57.4 miles from Louisville. Trains are now run from Louisville through to Bloomfield.

Danville & New River.—The track is now laid on this road from Danville, Va., westward to Cascade, in Pittsylvania County, a distance of 22 miles. The road is to be opened for business Dec. 1.

East Tennessee & Western North Carolina.—This road is now completed from the East Tennessee, Virginia & Georgia at Johnson, Tenn., eastward to Elizabethton, about seven miles. Work is progressing steadily towards the Cranberry mines in North Carolina.

Galveston, Harrisburg & San Antonio.—Track on the extension of this road is now laid to Uvalde, Tex., 91 miles west by north from San Antonio. Trains have begun to run to that point.

Georgia Pacific.—Terms of consolidation have been agreed on between the companies of this name in Georgia and Alabama, and also with the Columbus, Fayette & Decatur Company of Mississippi, which recently acquired by purchase the property and franchises of the Greenville, Columbus & Birmingham Company. Meetings of the stockholders will be held shortly to complete the consolidation.

Tracklaying was begun at Atlanta, Ga., last week. The grading is now completed from that city west to Douglasville, about 30 miles.

Greenville & Laurens.—This company is negotiating with the Augusta & Knoxville for aid in the building of its proposed line from Greenville, S. C., to Laurens, about 26 miles.

Greenville, Columbus & Birmingham.—This company has sold its property and franchises to the Columbus, Fayette & Decatur Company, which is to be consolidated with the Georgia Pacific. The road has lately been extended and is now in operation from Greenville, Miss., east to Johnsonville on the Sunflower, 32 miles, with a branch from Stoneville to Arcola, 12 miles. An extension of the branch from Arcola, 12 miles further, is graded. The road is now of 3 ft. gauge, but will probably be changed.

Indiana, Bloomington & Western.—On the extension of this road from Indianapolis eastward to Springfield, O., the grading is nearly finished, and track is now laid for 25 miles from the junction with the Belt road at Indianapolis. Tracklaying has been begun at several other points.

Indianapolis, Decatur & Springfield.—At a meeting held in Indianapolis, Nov. 17, the stockholders voted to authorize the directors to take all necessary action to carry out the plan heretofore adopted for the adjustment of part of the company's debt.

Notice is given that the preferred stock and new second-mortgage bonds will be ready for delivery at the company's office, No. 120 Broadway, New York, on and after Dec. 1, 1881. Holders of second-mortgage bonds, with all coupons thereto belonging, or of the Central Trust Company's certificate for the same, will receive the following new securities: For each income bond, 10 shares ($1,000) in preferred stock and $350 in new second-mortgage 5 per cent. bonds. Scrip will be issued for the bonds, exchangeable for bonds in amounts of $500 or multiples thereof.

Jacksonville, Pensacola & Mobile.—The Florida Circuit Court, at the suit of Frank R. Sherwin, has granted a temporary injunction restraining the purchasers of this road at foreclosure sale from transferring it to the Jacksonville & Mobile Company. Plaintiff claims that the organization of that company is illegal and void. The road will continue to be held by the purchasers, who are trustees for the Dutch holders of the Florida state bonds issued in aid of the road, the injunction holding until the suit is decided.

Kansas Central.—Track on this road is now laid to Clay Centre, Kan., 22 miles west of the late terminus at Garrison, and 141 miles from Leavenworth. Work is in progress from Clay Centre to Star Centre.

Lehigh Valley.—This company has bought for $300,000 the Tifft estate in Buffalo, a large property with water front, adjoining the Buffalo Creek road. The object is to secure room for an enlargement of its facilities for shipping coal from Buffalo.

The company has completed a branch about three miles long from its New Jersey Division to the town of Clinton in Hunterdon County. Trains began to run over the branch this week

Marquette, Houghton & Ontonagon.—This company is building an extension of 450 ft. on its ore dock at Marquette, Mich., which will give room for 60 additional ore pockets. The extension will be needed if the ore business next year equals that of this season.

McComb, Deshler & Toledo.—A receiver has been appointed for this road on the petition of several creditors. The road is 10 miles long, from McComb, O., on the Dayton & Michigan, to Deshler.

Memphis & Charleston.—The Atlanta (Ga.) *Constitution* in an article on the change of directors last week says: "The road, as is well known, was in a fearful condition at the time of the lease. The road had been laid originally with old chair rails, the bridges were dangerous and the equipment of the most inferior kind. After the lessees took it they commenced at once to improve the road-bed, a large quantity of steel rails was laid, the road was ballasted, and good engines and cars provided for it, and it is rapidly becoming one of the best roads in the South.

"This road is an important link in the line from this state to the West, and if the Cole-Seney system loses it, and it is absorbed by the Louisville & Nashville system, it will destroy for the present our chance for a competing line to the West. That this will be a serious blow to the prosperity of our state no one will doubt. * * * *

"From information in our possession which we are not permitted to give in detail, we are satisfied that there will be no interruption in the present arrangement of the Cole-Seney system. It is altogether possible that suits will be established to annul the lease, but from the fact that a large majority of the present stockholders purchased the stock they now hold with full knowledge of this lease, any suit they may institute to annul it will only result in the permanent injury of the stockholders themselves. When a party has to pay the attorneys on both sides of a lawsuit he will certainly come out behind, and in this case, when the end to be accomplished is only to bottle up the road to keep it from being used by a competing line, the game is not worth the candle. We look forward with perfect confidence to the day when the Memphis & Charleston will be one of the most important lines leading to Georgia, and it will not be more than twelve months before this is accomplished."

Minneapolis, Perham & Manitoba.—This company has been organized to build a railroad from a point on the St. Paul, Minneapolis & Manitoba near Alexandria to Perham, and thence northward to the northern line of the state east of the Red River. The capital stock is to be $3,000,000. The company's office is at Perham, Otter Tail County, Minn.

Nevada & Oregon.—The fight over this organization has resulted in the election of two boards of directors, one representing the Nevada stockholders and the other New York parties who claim to have money invested in the road. One party is grading a section of road out of Reno, Nev., and claims to have assurances that money will be advanced to go on with the work as soon as the first section of 20 miles is completed.

The proposed line of the road is from Reno northward about 200 miles to the Oregon line, and southward about 100 miles to the Bodie mining district.

Newberne & Beaufort Canal.—Work is soon to be begun on this canal, which will be about 10 miles long, extending from the lower Neuse River to Newport Creek, which runs into the harbor of Beaufort, N. C. It will pass through low land, presenting no special difficulties. The canal is to be of the same capacity as the Albemarle & Chesapeake Canal, admitting the vessels which run through that canal and the North Carolina sounds. From Beaufort there is inland navigation through the chain of sounds extending along the coast almost to the Cape Fear River, and a short canal would give connection with that river, enabling a steamer of considerable size to pass inland from New York to Wilmington.

New York & New England.—It is reported that Mr. Jay Gould has secured a controlling interest in this road and that a board of directors in his interest will be chosen at the coming annual meeting. This is something of a surprise, as it was not known that Mr. Gould's plans extended in that direction. It is reported also that he will establish a close connection with New York, either by an alliance with the New Haven road, or by building a new road from Danbury to the Harlem River. In either case the passenger business will be brought into New York over the Second Avenue Elevated line and a down-town passenger station will be established.

New York, New Haven & Hartford.—It is said that this company will next season build two additional tracks from Williamsbridge, N. Y., to Stamford, Conn., to be used for through passenger and freight trains, leaving the present tracks clear for local business.

New York, Texas & Mexican.—This company claims to have its road now graded from Rosenberg Junction, Tex., over 50 miles toward Victoria, with a large force at work on the remaining 50 miles to reach that place. Rails, equipment and iron bridges are under contract. The road is to run from Rosenberg Junction on the Gulf, Colorado & Santa Fe, to Brownsville, with branches to several points. It will be in all about 350 miles long. Arrangements have been made for the use of the Gulf, Colorado & Santa Fe track from Rosenberg to Galveston.

Old Colony.—At the annual meeting Nov. 22 the stockholders voted to authorize the issue of $500,000 interest bearing notes to fund maturing debt or for other purposes; also to build a short branch from Taunton to Raynham.

Ohio & Mississippi.—Receiver John King, Jr., makes the following final report for the period from Oct. 1 to Oct. 6:

Cash on hand, Oct. 1	$187,656
Receipts from all sources	116,475
Total	$304,131
Disbursements	191,999
Balance, Oct. 6	$112,132

Receiver Douglas' report for the balance of the month is as follows:

Balance, Oct. 7	$112,132
Receipts from all sources	375,929
Total	$488,061
Disbursements	325,455
Balance, Nov. 1	$162,606

The total receipts for the month were $492,404, and the disbursements $517,454. The payments included $135,000 for coupons on bonds.

Pensacola & Atlantic.—Tracklaying on this road was begun at Pensacola, Fla., Nov. 16. The track is to be hurried forward as fast as possible, to assist in the work of construction.

Peninsula, of Virginia.—It is said that negotiations are in progress, with some prospect of success, for the building of the line, projected years ago, from Newtown, Md., down the Eastern Shore counties of Virginia to Cherrystone, about 60 miles. The plan is to make this road complete a line from Philadelphia to Norfolk, Va., connection being made by a steam ferry from Cherrystone to Ocean View, whence a railroad runs to Norfolk.

Port Royal & Augusta.—At the annual meeting last week the following statement was presented for the half-year ending June 30:

	1881.	1880.	Increase.	P. c.
Gross earnings	$179,166.09	$132,714.67	$46,451.42	34.9
Expenses	137,495.83	110,152.95	27,342.88	24.8
Net earnings	$41,670.26	$22,561.72	$19,108.54	84.5
Per cent. of exps.	76.81	82.82		

At the meeting a board controlled by the Central, of Georgia, was chosen, and it is announced that the road will pass formally under the Central's control on Dec. 1. After that date trains will probably run to and from the Central station in Augusta.

Philadelphia & Reading.—The Receivers' statement for October and the eleven months of the fiscal year from Dec. 1 to Oct. 31 is as follows:

	October.		Eleven months
Railroad Co.	Gross.	Net.	Net.
Railroad traffic	$1,822,830.43	$803,015.49	$7,531,268.72
Canal traffic	95,561.48	48,772.90	341,023.20
Steam colliers	61,349.60	32,629.70	249,980.45
Richmond barges	10,206.37	1,413.69	2,407.83
Total Railroad Co.	$1,989,947.97	$885,831.78	$8,124,680.20
Coal & Iron Co.	1,441,673.57	146,434.00	971,262.74
Total	$3,431,621.54	$1,032,265.78	$9,095,942.94

Expenses do not include interest or rentals, the net earnings being the amount from which all charges are to be paid. A comparison of net earnings is as follows:

	October.		Eleven months.	
	1881.	1880.	1881.	1880.
Railroad Co.	$885,831.78	$903,108.45	$8,124,680.20	$7,662,605.14
Coal & Iron Co.	146,434.00	140,758.71	971,262.74	375,955.64
Total	$1,031,265.78	$1,043,867.16	$9,095,942.94	$8,038,560.78

October shows a slight falling off, but the two companies made for the eleven months a gain of 13 per cent. in net receipts. The Coal & Iron Company especially shows a very large gain.

The traffic of the road was as follows:

	October.		Eleven months.	
	1881.	1880.	1881.	1880.
Passengers carried	990,691	921,470	9,692,462	9,048,267
Tons merchandise	648,709	527,944	6,060,535	5,409,398
Tons coal	812,499	719,415	7,246,375	6,410,000
Tons coal on colliers	49,461	44,388	510,341	498,916
Tons coal mined:				
By Coal & Iron Co.	420,116	361,198	3,516,216	3,066,603
By tenants	147,027	133,493	1,336,967	1,096,722
Total	567,143	494,691	4,853,183	4,163,325

The increase in coal mined from the company's lands will probably reach 750,000 tons for the full year, and the increase in coal transported about the same figure.

McCalmont Brothers & Co. have issued a very long circular to the stockholders asking for proxies and defending their course. It is of the same general tenor as President Bond's recent circular, and contains very many charges of extravagance and mismanagement against the Gowen administration of the company's affairs.

Richmond, Fredericksburg & Potomac.—At the annual meeting last week the stockholders passed, after some discussion, the following resolution, submitted by the board:

"*Resolved*, That for the purpose of dividing among the common stockholders of the company the amount standing upon its books to the credit of profit and loss, which amounts have been heretofore carried by the company and expended in permanent additions to and improvement of the company's property, instead of being used in the payment of dividends, the board of directors be and they hereby are authorized in their discretion to issue dividend obligations or certificates in amount of $100 or multiples of that amount, bearing in lieu of interest on each $100 of the certificates, the dividends payable on each share of the common stock of the company at the several dates when such dividends shall be payable, and entitled in any division of the assets of the company to share in a corresponding proportion of the same. For the fractional part of $100 to which any stockholder may be entitled there shall be issued to him a certificate of dividend scrip, which certificate may be converted at the option of the holder into dividend obligation when presented in sums of $100, but which shall not be entitled to interest or a share of the dividends until so converted."

The amount expended on the road from earnings, for which these new certificates are to be issued, is about $755,000, or about 75 per cent. of the common stock.

Rome, Watertown & Ogdensburg.—Under the proposed plan of reorganization there will be issued first consolidated mortgage 40-year 5 per cent. gold bonds to an amount not exceeding $8,440,000, income bonds bearing interest at a rate not to exceed 7 per cent. per annum and non-cumulative, payable in 50 years (with the right to retire such as may be drawn by lot at the end of each year) to an amount not exceeding $2,358,140, and common stock not to exceed in amount $5,293,900. Holders of the present consolidated convertible bonds are to receive in exchange for these securities the new consolidated mortgage bonds and income bonds for the back unpaid interest from Oct. 1, 1877, to July 1, 1882. Stockholders are to receive new stock in exchange for the old and income bonds for the assessment of $10 per share which they are called on to pay. Of the new consolidated mortgage bonds a sufficient amount is to be held in trust to pay off existing liens prior to the old consolidated mortgage bonds, as follows:

Watertown & Rome bonds, 7 per cent	$418,500
First-mortgage 7 per cent. bonds	1,021,500
Second-mortgage 7 per cent. bonds	1,000,000
Syracuse Northern 7 per cent. bonds	500,000
Total	$2,940,000

Besides these prior lien bonds the present liabilities are $5,500,000 old consolidated bonds, $1,540,000 overdue coupons and $448,569 floating debt. The present stock is $5,293,900 in amount.

Sabine & East Texas.—This road (formerly the East Texas) is now opened for business from Beaumont, Tex., on the Texas & New Orleans road, northward to Village, 35 miles, the intermediate stations being Concord, Carroll and Kountze. Track is also laid from Beaumont southward to Taylor's Bayou, 16 miles.

St. Louis & San Francisco.—Notice is given that 50 Atlantic & Pacific land debenture bonds have been drawn for redemption in accordance with the terms of the mortgage. The numbers drawn are: 40, 58, 81, 85, 86, 114, 123, 127, 131, 136, 140, 145, 147, 149, 150, 151, 153, 178, 180, 182, 184, 190, 191, 202, 204, 207, 212, 271, 272, 274, 277, 318, 322, 323, 336, 343, 346, 348, 349, 368, 369, 370, 373, 412, 415, 421, 424, 425, 428 and 430. These bonds will be paid at the office of the St. Louis & San Francisco Company in New York Jan. 1, 1882, and will cease to bear interest from that date.

Shenandoah Valley.—The Richmond (Va.) *State* says: "An inspection of the Shenandoah Valley extension, from Waynesboro to Roanoke, formerly Big Lick, Roanoke County, has been made by the officials. Including trackmen, masons and carpenters, 3,760 men are on the work, and should an open winter ensue the extension will be completed by February, and by the end of March trains will be running through to Roanoke, the connection with the Norfolk & Western. A powerful hoist is being constructed there to be used for changing trucks of the cars to meet the gauge of the road. Plans for a large town at Roanoke have been completed, including a joint depot and a $40,000 hotel. English steel rails are used for the tracks, and a Philadelphia firm is putting up 13 iron bridges on the line."

Sioux City & Pacific.—Track on the Nebraska Division is now laid to Long Pine, Neb., 18 miles west by north from the late terminus at Atkinson and 100 miles from Neligh. Long Pine is to be the terminus for the winter

South Carolina.—The Charleston *News and Courier* says: "We are informed that a basis of settlement between the Purchasing Committee of the South Carolina Railroad and the Charleston syndicate, involving the claim of the latter for expenses, etc., has been agreed upon, and that a final adjustment of the matters so long in dispute is now in sight. This being so, the only unsettled question will be the appeal of Cockcroft, who claims that the bidding at the sale of the road was chilled by a sudden settlement made with one of the creditors who had determined to bid high for the property. We suppose that the Cockcroft appeal can be disposed of, and in that event the road will soon be at the end of complications which promised to be interminable. Time is money, especially in railroad management, and too much time has been lost already."

South Shore Railroad & Tunnel Co.—Bids will be received at the office of Robert Watson, Secretary of this Company, in Montreal, Can., until Dec. 10, for the construction of a tunnel under the St. Lawrence River, near Montreal. Further information can be obtained at the office of the company.

State University.—The grading of this road is now nearly completed from University station on the North Carolina road to Chapel Hill, where the University of North Carolina is situated, and only two bridges are still unfinished. Track has been laid from University station to New Hope bridge, six miles, leaving six miles to lay, the road being 12 miles long.

Union Pacific.—Notice is given that 77 Omaha Bridge bonds have been drawn for redemption in accordance with the terms of the mortgage. The numbers drawn are 21, 48, 115, 124, 138, 146, 241, 283, 327, 397, 473, 535, 538, 575, 619, 632, 672, 762, 771, 792, 798, 801, 856, 899, 908, 1015, 1020, 1036, 1040, 1076, 1098, 1112, 1117, 1142, 1163, 1172, 1174, 1182, 1200, 1236, 1239, 1250, 1254, 1322, 1364, 1389, 1408, 1454, 1460, 1495, 1526, 1528, 1541, 1581, 1644, 1673, 1676, 1705, 1711, 1805, 1807, 1876, 1898, 1909, 1991, 2035, 2044, 2092, 2100, 2149, 2229, 2250, 2351, 2403, 2431, 2461 and 2486. These bonds will be paid April 1 next at the London & San Francisco Bank, London, or the office of Drexel, Morgan & Co., New York.

Wabash, St. Louis & Pacific.—Work is progressing very fast on this company's new branch from Albia, Ia., on the Peoria & Iowa Division, to Des Moines. It will be 68 miles long, and for about one-third of its length parallel and close to other lines. Two expensive bridges over the Des Moines River are nearly finished, and work has been begun on the freight house in Des Moines.

Western North Carolina.—At a meeting held in Raleigh, Nov. 18, the state commissioners having a supervision over this road resolved to extend the time for the completion of the main line to Paint Rock and the Ducktown Branch to Pigeon River for four months. They also refused to declare a forfeiture of the contract of sale by the state, which had been asked for on the ground that the company was not using due diligence to complete the road, and that it had discriminated in freight charges against North Carolina interests. The commissioners decided that the charges were not supported by evidence.

ANNUAL REPORTS.

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Baltimore & Ohio.

The lines worked by this company during the year ending Sept. 30, 1881, which is covered by the 55th annual report, were as follows:

	Miles.
Main Stem, Baltimore to Wheeling	379.00
Camden and Locust Point Branches in Baltimore	6.50
Frederick Branch	3.50
Valley Branch, Harper's Ferry to Harrisonburg	101.00
Metropolitan Branch, Point of Rocks to Washington	43.00
Alexandria Branch (Wash. City & Point Lookout R. R.)	12.50
Somerset & Cambria (from Jan. 23, 1881)	45.00
Total Main Stem and branches	590.50
Washington Branch, Relay House to Washington	31.00
Parkersburg Branch, Grafton to Parkersburg	105.40
Central Ohio Division, Bellaire to Columbus	138.60
Lake Erie Division, Newark to Sandusky	116.00
Chicago Division, Chicago Junction to Chicago	263.00
Wheeling, Pittsburgh & Baltimore R. R.	32.00
Newark, Somerset & Straitsville R. R	44.00
Pittsburgh Division, Cumberland to Pittsburgh	150.00
" " Fayette County Branch	14.00
" " Mt. Pleasant Branch	10.00
" " Garrett to Berlin	8.50
" " Rockwood to Somerset	9.00
	191.50
Total	1,512.00

President Garrett's report, as presented at the annual meeting, Nov. 21, says:

"The sinking fund for the payment of the loan of the city of Baltimore, which was originally $5,000,000, increased during the year $114,969.07, making the payment in advance and in reduction of that loan, which will mature in 1890, $2,396,220.41.

"The payments for investments on account of the sinking funds for the redemption of the sterling loans due in 1895, 1902, 1910 and 1927 during the year amounted to $525,218.25, which at $4.84 per pound sterling, make £108,516 3s. 5d.

"On Aug. 1, 1881, £200,000 debentures, which were given on Aug. 1, 1876, payable in five years, with interest at 5 per cent. per annum, semi-annually, matured and were paid. Twelve per cent. premium was obtained for the gold at the time of the negotiation of these obligations. During the period that gold ranged from 10 to 15 per cent. premium the company issued an aggregate at different periods of £1,000,000 of debentures, payable at three and five years from their respective dates, all of which have matured and been paid. The result to the company of the negotiations, by thus having obtained the premium on gold at the periods of their issue respectively, and by paying these obligations at par, after the resumption of payments of specie in the United States, has been a net gain of £105,182, being upward of $500,000.

"In accordance with the agreement with the city of Baltimore, the sixth annual payment, namely $40,000 of the principal of the bond for $1,000,000, given for the purchase of the interest of the city in the Pittsburgh & Connellsville Railroad Company, has been made, thus reducing this obligation to $760,000.

"The following statement shows the payments made and the increments in sinking funds during the fiscal year for account of the respective debts:

Increment of city sinking fund	$114,969.07
Increment of sinking funds for the redemption of the sterling loans due in 1895, 1902 and 1910	482,613.85
Payment on account of the principal of debt to city of Baltimore for the purchase of its interest in the Pittsburgh & Connellsville Company	40,000.00
The Pittsburgh & Connellsville sinking fund	24,122.27
The Baltimore & Ohio and Chicago Railroad Companies' sinking fund	42,604.40
The Washington City & Point Lookout Railroad Company's sinking fund	4,015.00
Total	$709,224.59

"The following shows the aggregate of payments made on account of the principal, and the investments for sinking funds on account of the debts stated:

On account of the mortgage loan redeemable in 1880	$120,500.00
On account of the mortgage loan redeemable in 1885	790,000.00
On account of the bonds of the Northwestern Virginia Railroad Company for $500,000, indorsed by the Baltimore & Ohio Railroad Company, payable in 1885	360,000.00
On account of the loan of the city of Baltimore	2,396,220.41
On account of the sterling loan redeemable in 1895	1,269,779.87
On account of the sterling loan redeemable in 1902	1,559,121.56
On account of the sterling loan redeemable in 1910	823,349.63
On account of the sterling loan for the Baltimore & Ohio & Chicago Companies redeemable in 1927	163,461.62
On account of the purchase of the interest of the city of Baltimore in the Pittsburgh & Connellsville Railroad Company	240,000.00
On account of the sinking fund of the Pittsburgh & Connellsville Railroad Company	117,894.50
On account of the sinking fund of the Baltimore, Washington & Alexandria Branch of the Washington City & Point Lookout Railroad Company	33,024.24
Total	$7,873,351.83

"Semi-annual dividends of 5 per cent. upon the capital stock were paid on Nov. 1, 1880, and on May 16, 1881.

"The profit and loss account shows an increase for the past year of $1,697,038.24. It will be seen by this account that the surplus fund, which represents invested capital derived from net earnings, and which is not represented by either stock or bonds, now amounts to $42,258,680.61.

"The needlessly low and unremunerative rates under which a large amount of traffic has been transported by the Trunk Lines have materially reduced the net results of the past as compared with those of the preceding years.

"The increase in the surplus fund for the year ended Sept. 30, 1880, was $2,356,984.44, while for 1881 it has been $1,697,038.24, thus showing a comparative decrease of net results, with a largely increased business of $659,946.20.

"The exceptional and highly conservative system of the Baltimore & Ohio Company, without precedent in America or Europe, by which more than forty-two millions of dollars of net earnings, unrepresented by stock or bonds, have been invested during a long series of years in great and valuable improvements and extensions, in connecting lines, in the great iron bridges over the Ohio River, in elevators, wharves, piers, docks, terminal facilities, real estate, stations, etc., has enabled the company to continue the payment of semi-annual dividends of 5 per cent. each on its capital stock, which amounts to only $14,783,300, a sum so limited as to present a marked contrast to that of all competing Trunk Lines, the capital stock of the New York, Lake Erie & Western Railroad being $75,879,300, that of the New York Central & Hudson River Railroad $89,428,300, and that of the Pennsylvania Railroad $68,870,200. The only effect, therefore, of the extremely low rates injudiciously forced upon it has been, in consequence of this very small amount of stock, to reduce its net earnings from upward of 6 per cent. in 1880, on its surplus fund of Sept. 30, 1879, $38,204,657.93, after the payment of cash dividends to its shareholders, to 4 per cent. in 1881, on its surplus fund of Sept. 30, 1880, $40,561,642.37. The result for the fiscal year, under these adverse circumstances, shows, in excess of the cash dividends, a net gain and consequent increase of $1,697,038.24 of that fund.

"These very satisfactory results under the serious and prolonged competition and unwise action of antagonistic interests show that the company can, whilst continuing to effect excellent results for all holding investments in its property, maintain a just policy, protective alike of the interests of its terminal cities and the regions with which it is connected."

The earnings of the various lines for the year were as follows:

	Earnings.	Expenses.	Net earnings.	P. c. of exps.
Main Stem and branches	$11,122,259.56	$6,275,643.71	$4,846,615.85	56.42
Washington Branch	353,570.45	160,037.21	193,533.12	....
Parkersburg Branch	712,158.28	639,736.16	72,422.24	89.85
Central Ohio Div	1,006,025.40	777,757.85	228,267.55	77.31
Lake Erie Div.	899,791.72	787,417.91	112,373.81	87.49
Chicago Div.	1,638,661.65	1,185,591.97	453,069.68	72.35
Pittsb'rgh Div.	2,500,548.58	1,376,075.20	1,124,473.38	55.30
Wheeling, Pitts. & Balt.	53,557.09	52,463.09	1,094.00	98.90
Newark, Somerset & Stratsv.	177,304.53	135,755.74	41,548.79	76.70
Total	$18,463,877.26	$11,390,478.84	$7,073,398.42	61.69
Tot'l previous year	18,317,740.00	10,330,770.00	7,986,970.00	56.39
Inc. or dec	I. $146,137.26	I. $959,708.84	D. $913,571.58	5.30
Per cent	0.8	9.2	11.5	....

A comparison of the net earnings of the various lines is as follows:

	1880-81.	1879-80.	Inc. or Dec.	P.c.
Main stem and branches	$4,846,615.85	$5,172,980.76	D. $326,364.91	6.3
Washington Branch	193,533.24	246,496.91	D. 52,963.67	21.5
Parkersburg Branch	72,422.12	371,829.06	D. 299,406.94	80.5
Central Ohio Div	228,267.55	311,454.49	D. 83,186.94	29.5
Lake Erie Div	112,373.81	208,853.94	D. 96,480.13	47.1
Chicago Div	453,069.68	566,673.63	D. 113,603.95	20.0
Pittsburgh Div	1,124,473.38	1,011,827.09	I. 112,646 29	11.1
Wh., Pitts. & Baltimore	1,094.00	8,594.40	D. 7,500.40	87.2
Newark, Som. & Str	41,548.79	88,259.74	D. 46,710.95	53.1

The Pittsburgh Division is the only line showing a gain in net earnings.

On the Washington Branch only maintenance and improvements are charged. Many improvements were made in road-bed and ballast.

The Parkersburg Branch expenses were increased by large renewals in steel, only 12 miles of iron track now remaining.

The Pittsburgh Division shows a surplus of $445,614.98 over all charges, which has been credited on account of interest on cash advances made by the Baltimore & Ohio Railroad Company to the Pittsburgh & Connellsville Railroad Company.

On the Baltimore & Ohio & Chicago (Chicago Division) the net earnings show a comparative decrease of $113,603.95. The interest paid upon the 5 per cent. sterling loan of £1,600,000 taken for account of these companies amounted during the year to $391,015.85, and the taxes to $46,871.04. The taxes paid, $46,871.04, being deducted from the net earnings, $453,069.68, leave $406,198.64, which has been credited in the interest account of the main stem, in which is charged the interest paid for the Baltimore & Ohio & Chicago loan of 1927.

The net earnings of the Chicago Division, and of the Wheeling, Pittsburgh & Baltimore Railroad Company, have been credited to the accounts for interest of those companies.

The gross earnings of the Central Ohio Division were $1 006,025.40, while the net were but $228,267.55, caused by the low rates for a large portion of the through business upon the line. Under the lease of the Central Ohio Railroad 35 per cent. of the gross earnings are paid annually to that company. The loss on this division for the year, under the agreement, was $123,841.34, which has been charged to the profit and loss account.

MAIN STEM AND BRANCHES.

The earnings and expenses of the Main Stem and branches (590.50 miles) were as follows:

	1879.	1880.	1881.
Earnings	$8,864,826.84	$11,229,880.61	$11,122,259.56
Expenses:			
General expenses	$117,768.26	$169,184.27	$210,627.92
Losses by accidents, etc	70,064.12	40,100.53	45,833.47
Expenses of transportation	1,680,162.53	1,952,942.57	2,156,414.44
Repairs of railway	547,108.64	776,171.79	1,083,969.53
Repairs of water stations	9,072.69	12,800.72	16,551.86
Repairs and construction of depots	63,258.44	103,910.41	141,236.90
Repairs of bridges	43,959.63	69,243.29	74,691.24
Rep'rs of telegraph lines	9,727.49	10,819.86	25,065.36
Repairs of stationary machinery	69,901.92	87,226.57	98,201.56
Watching cuts	36,898.14	37,679.32	34,854.32
Watching tunnels	3,218.32	3,523.54	4,406.77
Watching bridges	17,731.80	16,550.42	18,928.71
Pumping water	24,170.81	26,728.76	29,386.82
Repairs of locomotives	508,190.57	721,125.11	686,795.58
Rep'rs of passenger cars	186,514.69	212,206.04	236,511.93
Repairs of burden cars, including construction of 1,690 new cars in 1880	774,772.18	1,359,206.04	911,995.82
Cleaning engines and cars	68,265.35	64,827.64	81,557.80
Conting'nt exp'nses of the machinery department	4,782.59	5,641.63	9,786.57
Fuel	268,406.32	367,017.76	386,893.87
Preparing fuel and filling tenders	19,607.26	19,993.58	21,933.24
	$4,523,581.75	$6,056,899.85	$6,275,643.71
Earnings more than expenses	$4,341,245.09	$5,172,980.76	$4,846,615.85
Working expenses	51.02 per ct.	53.93 per ct.	56.42 per ct.

It is shown that the earnings of the Main Stem and the branches stated, in comparison with the fiscal year 1880, have decreased $107,621.05, and the working expenses have increased $218,743.86, making a comparative decrease in net profits of $326,364.91.

The expenses of working and keeping the roads and machinery in repair amounted to $6,275,643.71, being 56.42 per cent. upon the earnings, showing an increase of 2.49 per cent. compared with the previous year, and of 5.40 per cent. compared with 1879.

IMPROVEMENT OF PROPERTY.

The report says: "The condition of the tracks and engines

has been brought to a high standard. New and splendid sleeping coaches, parlor and thoroufare cars have been added, replete with every modern improvement and convenience, so that the company now furnishes an equipment unsurpassed for comfort and elegance. The hotels owned by the company are in superior order, and continue to be managed with exclusive regard to the advantage and enjoyment of guests. Their attractions, combined with moderate charges, have been greatly appreciated by the public, and have aided in obtaining the satisfactory increase of revenue from passengers. The beautiful country and delightful and singularly salubrious summer climate of the Glades region, forming the table land of the Allegheny mountains, in Garrett County, Maryland, induced, during the past summer, a great increase of visitors. The hotels built by the company at Deer Park in 1873 and at Oakland in 1876, were filled throughout the recent season to their extreme capacity, and the manager found it necessary to refuse more than 1,000 applications of those who desired to be guests. As the requirements for room for the next and future seasons are already large, it has been determined to so improve the hotels at both Deer Park and Oakland as to double their capacity, and to complete the addi i nal structures in time for occupation next season. The great economy, comfort and facility with which these admirable mountain summer homes can be reached from Washington, Baltimore, Philadelphia, Wheeling, Pittsburgh, Columbus, Chillicothe, Chicago, Cincinnati, Louisville and St. Louis, as well as from other Eastern and Western cities and sections, will continue to secure a great and increasing travel to these charming resorts. * * *

"Thirty-five engines were built at the company's works at Mount Clare, namely, 22 of the largest class for freight service, and known as the Consolidation, each weighing 51 tons, with cylinders 20 by 24 in. 50-in. driving wheels, 8 drivers connected, with a 2-wheel pony truck; 12 for passenger service, each weighing 83,200 pounds, with cylinders 18 by 24 in. with 4 drivers of 69 in. each in diameter; and one for switching purposes, weighing 67,050 pounds, with cylinders 17 by 24 and with 4 drivers of 50 in. each in diameter. Of the number constructed, 27 engines costing $227,109 26, have been charged to rolling power, and 8, costing $74,259 12, which replace that number withdrawn, because their capacity and patterns were not adapted to the president requirements of the service, have been charged to the repair account. Thirteen hundred and eight cars have been built at Mount Clare, and 34 sleeping and parlor cars, of the latest design and finish, combining all the modern comforts and conveniences, and 6 passenger cars, have been purchased. The cars built at Mount Clare include 30 superior 8-wheeled passenger, 5 baggage, 362 house, 12 express, 594 gondola, 95 hopper gondola, 96 stock rack, 3 double deck rack, 50 refrigerator, 41 caboose, 20 dump, side dump, stone truck, riggers and flat bottom. All the freight cars built have a capacity of 40,000 lbs., being nearly double that of the cars formerly used in the service. Of this aggregate of 1,348 cars, 944 being new and additional plant and costing $872,752.22, have been charged to rolling power; 404 cars were built to replace that number worn out, and their cost, $150,937.75, has been charged to the repair account. The axles of 626 house and 409 gondola cars have been enlarged and their iron trucks trussed, thus increasing their capacity from 26,000 to 40,000 pounds; 545 iron hopper coal cars have been furnished with the standard axle, 3½ by 7 in. journal, which change, combined with the raising of the sides, has increased their capacity 50 per cent. The cost of these improvements, $36,823.65, has been charged to the repair account.

"The third elevator, C, was completed Sept. 8, 1881, and most opportunely. Its great capacity, 1,800,000 bushels, added to the large capacity of elevators A and B, furnishing together storage capacity for four millions of bushels, prevented a blockade of grain deliveries, which was threatened in consequence of the advance of prices in the United States beyond the rates which would permit shipments to Europe. This great additional facility therefore prevented large costs and losses to Western shippers, and enabled the Baltimore & Ohio Company to render signal and highly appreciated service to the shippers from the West and to merchants connected with the grain interests of Baltimore.

"The fixed policy of the Baltimore & Ohio Company is to continue to add large and effective facilities by which the increasing business and commerce can be thoroughly accommodated and promoted."

TRAFFIC.

The statements of traffic given in the report are as follows:

	1880-81.	1879-80.	Inc. or Dec.	P. c.
Tons through freight, East and West	2,014,110	1,980,397	I. 33,713	1.7
Bbls. flour to Balto	959,568	598,992	I. 360,576	60.1
Bu. wheat to Balto	12,572,332	16,409,300	D. 3,836,968	23.4
" corn "	6,728,287	8,510,456	D. 1,782,169	20.9
" all grain "	20,329,858	25,962,696	D. 5,632,838	21.7
Tons live stock carried	115,885	165,454	D. 49,569	29.8
Tons lumber to Balto	79,003	54,530	I. 24,473	44.9
Coal tonnage:				
Main Stem, revenue	1,756,087	1,831,890	D. 75,803	4.2
" " company	424,521	423,256	I. 1,267	0.3
Total Main Stem	2,180,608	2,255,146	D. 74,538	3.3
Pittsburgh Div	1,980,102	1,821,256	I. 158,846	8.7
Trans-Ohio lines	378,917	312,454	I. 66,463	21.3
Total	4,539,627	4,388,856	I. 150,771	3.4

Coal tonnage of the Pittsburgh Division includes coke. Of the Main Stem revenue tonnage of coal 1,513,174 tons were carried to Baltimore, and 242,913 tons delivered to local points.

The passenger earnings exhibit an increase from $1,379,990.34 in the preceding year, and $1,171,033.30 in 1879, to $1,714,922.16.

The concluding portion of Mr. Garrett's report is as follows:

THE BALTIMORE & OHIO RAILROAD EMPLOYÉS' RELIEF ASSOCIATION.

"In the last annual report it was stated that, with the desire of protecting and promoting the interests of the employés of the Baltimore & Ohio Company and of their families, in cases of accident, sickness and death, the board had adopted an insurance scheme which had been carefully prepared after much study and examination of the numerous systems in use in Europe and America. The company made an appropriation of $6,000 per year, being the equivalent of 6 per cent. on $100,000, as part of basis and capital of the insurance fund. It was also stated that the prominent and active officers, and many thoughtful leading men connected with all branches of the service, had taken an earnest interest in placing the system in effective operation, and that their cordial good-will and kind and friendly intercourse with the employés had caused the advantages and excellence of the system to be quickly appreciated, and that it was hoped the sound principles on which the association was based, its great usefulness and the security it offered for every member, would insure its permanent maintenance and increased success. It is gratifying to state that the amount of relief afforded to its members, and its usefulness in promoting the welfare and efficiency of the employés, have exceeded the most sanguine expectations, and that its growth and popularity have been unprecedented in the history of railway relief organizations on this continent. It has at this time an active membership of 14,673, none but employés being allowed to acquire or retain membership in the organization. During the 18 months of its existence, 6,239 claims and 1,269 bills for medical attendance have been paid, amounting to $163,929.77. The satisfactory working of the association has already enabled the committee of management to double the allowance in cases of natural death of its members.

THE BALTIMORE DRY-DOCK.

"It is gratifying to state that the dry-dock, which was completed in 1880, has proven eminently successful and valuable for the commerce of the port. Messrs. Malster & Reaney, the lessees of the property, have made large additions to the machinery. Their skill and enterprise have added materially to the advantages and facilities of the shipping interests connected with the navigation of the Chesapeake. The dry-dock has been in constant use since its completion, and has received for repair 55 steamships and sailing vessels, many of which were of large tonnage, and some of which retained their full cargoes while in the dock. The strength, dryness and general efficiency of the structure have been thoroughly tested, and have given much satisfaction.

DEEPENING THE CHANNEL TO THE PORT OF BALTIMORE TO 27 FEET.

"Upon a call from Congress for information as to the cost of increasing the depth of the channel, from the deeper water of the Chesapeake Bay to the inner harbor of Baltimore, from 24 feet at mean low water, the available depth at that time, to 27 feet at mean low water, a report was made in January, 1881, by United States Engineer Lieut. Col. William P. Craighill, in which the cost of that work was stated to be $1,250,000, a full examination of the subject having enabled him to reduce the cost, from the previous estimate furnished to the United States Senate on June 14, 1880, $250,000, namely, from $1,500,000 to $1,250,000. Congress sanctioned this important step forward in the improvement, in express terms, in the River and Harbor Act of March 3, 1881, and made an appropriation of $150,000 for commencing it. The engineer had the sum of $172,000 from former appropriations available for the same work, making a total of $322,000. A contract was made to the extent of the available funds with the American Dredging Co., stated to be an energetic and reliable firm. The work was commenced with one large dredge, and two others have been added, and two more are expected in a short time. While the increase of depth is being secured, an important change will be made in the position of a part of the channel, by which the distance will be lessened by nearly a mile, and the cost of maintenance decreased. To complete this improvement in the shortest possible time will undoubtedly be true economy. All the advantages of the improvement can only be secured when it is completed. The longer the time occupied in the work the longer Baltimore, and the vast interests depending upon the economies of the port, will be delayed in obtaining that which her commerce—embracing the exports and imports of the vast West and Northwest, the South and Southwest—needs at once. It is understood that the able, judicious and effective representative of the United States, the Engineer in charge of this great work, has asked Congress to appropriate at its next session, in one sum, the balance necessary to complete it, estimated at $900,000. As so many, such important and great interests will be benefited by this work, which, if the appropriation be promptly made, can be completed in a brief time, it is earnestly hoped that it will be speedily granted so that the work can be rapidly prosecuted, and thus quickly place Baltimore in a position to furnish a sufficient depth of water for the largest steam and other ships used in commerce, and also reduce the cost of freight to shippers, thereby giving this valuable economy to the consumers and producers of 37 states and territories, who so largely use Baltimore as their best port for foreign trade.

CHESAPEAKE & DELAWARE CANAL.

"In the last annual report it was remarked that the importance of constructing this great national work was attracting constantly increasing attention. The advantages and importance of the proposed first-class ship canal, from a suitable point connecting the Chesapeake with the Delaware Bay, near the excellent harbor made by the United States government by the construction of the Delaware breakwater, continues to be a subject of increasing interest. The attention of the great sections of the country which use the port of Baltimore as their most economical entrepot is being attracted constantly in a greater degree to the value of this outlet. The advantage of decreasing the cost of transportation, by saving nearly 200 miles of the distance for vessels bound to or from European ports and for New England, in its intercourse with the regions connected with Baltimore, and avoiding the most objectionable part of the navigation of the existing route, is receiving the attention its importance demands. A provision of the Sundry Civil Bill, approved March 3, 1881, required additional surveys to be made by the Engineering Department of the United States across the peninsula of Delaware and the Eastern Shore of Maryland, for the purpose of establishing a route by canal for a connection between the waters of the Chesapeake and Delaware bays. These surveys have been in progress during the summer and autumn under the general direction of Lieut.-Col. Craighill, and under the immediate personal supervision of Captain Thomas Turtle, corps of engineers. The results of these additional surveys will be communicated to Congress early in the next session.

"The great public interests demand the most direct available route, accessible at all times, by which there will be the least detention from ice or otherwise. It is anticipated that the present surveys will demonstrate the best practicable route, and it is hoped that such action will be taken by Congress as will insure this vast economy to the commerce of the larger part of the United States. Not only should this canal be constructed to create the great economies for such an immense commerce, but because it will afford unquestionably naval and military advantages of incalculable value in case of foreign war, through the capacity it would furnish, without exposure to hostile cruisers on the ocean, for quick and safe transfer of vessels of war between the Chesapeake and Delaware bays, so as to be used alike for the protection of the National Capital, Baltimore and Philadelphia, and the numerous cities and populations on the Potomac and Delaware rivers and the regions connected with these vast areas. The tonnage of through merchandise, east and west was:

For 1871	435,207 tons.	For 1877	1,047,645 tons.
" 1872	557,609 "	" 1878	1,149,499 "
" 1873	640,265 "	" 1879	1,425,629 "
" 1874	752,256 "	" 1880	1,980,397 "
" 1875	872,101 "	" 1881	2,014,110 "
" 1876	1,093,393 "		

"The board express with pleasure their continued appreciation of the successful management of the business of the company through the faithfulness and efficiency of the officers and employés in all departments of the service.

Burlington, Cedar Rapids & Northern.

This company's report covers a period of 18 months, from July 1, 1879, to Dec. 31, 1880, the fiscal year having been changed to end with December instead of July. The roads worked by the company at the close of the year were as follows:

	Miles
Main Line, Burlington, Ia., to Albert Lea, Minn	252
Milwaukee Division, Linn, Ia., to Postville	94
Pacific Division, Vinton, Ia., to Holland	48
Iowa Falls Division, Holland, Ia., to Clarion	55
Muscatine Division, Muscatine, Ia., to Riverside	31
Iowa City Division, Elmira, Ia., to Montezuma	83
Total	563

The track from Manly Junction to Northwood, 11 miles, is owned by the Central Iowa Railway, and operated in conjunction with that railway. The track from the state line to Albert Lea, 12½ miles, is owned by the Minneapolis & St. Louis Railway Company, and is leased to the company for a term of 999 years.

There are three subordinate companies owning parts of the line, but they are really owned by this company.

The equipment consists of 46 engines; 13 passenger, 2 chair, 1 sleeping, 9 combination and 8 baggage and mail cars; 1,059 box, 111 stock, 224 coal, 90 flat and 28 caboose cars; 7 service cars; 105 hand and 120 rubble cars.

The general account, condensed, is a follows:

Stock		$10,000,000.00
Bonds		8,059,000.00
Vouchers and accounts		175,440.69
Income		1,069,674.93
Balance of income from last report		1,029,057.08
Total		$20,333,172.70
Total cost of property, including leased lines	$14,923,437.24	
Stock not issued	4,500,000.00	
Sundry assets, cash, etc	273,603.85	
Materials	99,989.21	
Interest	536,142.40	
		20,333,172.70

Of the bonds $6,500,000 bear 5 per cent.; $150,000 Minneapolis & St. Louis, 7 per cent.; $584,000 Iowa City & Western, 7 per cent.; $825,000 Cedar Rapids, Iowa Falls & Northwestern, 6 per cent.

For the eighteen months the traffic was as follows:

Train miles:	Six months, 1879.	Year, 1880.	Total.
Passenger	219,678	425,599	645,277
Freight	289,166	931,617	1,220,783
Service and switching	113,570	200,565	314,135
Total	622,414	1,557,781	2,180,195
Pass.-car miles	726,758	1,502,043	2,229,701
Passengers carried	160,778	319,033	479,811
Passenger miles	5,678,256	11,333,119	17,011,375
Tons freight moved	620,075	1,375,052	1,993,127
Ton miles	40,200,726	110,244,307	150,644,733
Av. rate:			
Per pass. per mile	3.157 cts.	3.190 cts.	3.124 cts.
Cost			2.580 "
Per ton per mile		1.480 "	1.530 "
Cost			0.933 "

Of the ton miles for the 18 months, 15,380,574 were of company freight moved free. Of the ton miles, 25,220,420 were of coal, the average rate on which was 1.08 cents per ton per mile.

The earnings were as follows:

	Six months, 1879.	Year, 1880.	Total.
Passengers	$179,309.85	$362,160.29	$541,470 14
Freight	672,385.74	1,633,498.38	2,305,884.12
Mail, etc	29,431.19	57,823.16	87,254.35
Total	$881,126.78	$2,053,481.83	$2,934,608.61
Expenses	552,246.83	1,343,724.71	1,895,971.54
Net earnings	$328,879.95	$709,757.12	$1,038,637.07

The earnings and expenses of the entire line for the calendar years 1879 and 1880 were:

	1880.	1879.	Increase.	P. c.
Earnings	$2,053,481.83	$1,534,950.90	$518,530 93	25.3
Expenses	1,343,724.71	984,808.79	358,915.92	26.7
Net earnings	$709,757.12	$550,142.11	$159,615.01	22.5
Gross earn. per mile	4,131.75	3,449.33	682.42	19 8
Net earn. per mile	1,428.08	1,236.28	191.80	15.5
Per cent. of exps.	65.44	64.16	1.28	.....

The average mileage worked was 496.63 miles in 1880 and 445.22 miles in 1879.

The general statement of expenditures from net earnings is as follows:

	Six months. 1879.	Year, 1880.	Total.
Net earnings	$328,879.95	$709,757.12	$1,038,637.07
Interest	$167,750.00	$367,420.00	$535,170.00
Construction	13,668.52	6,622.61	20,291.13
Improvement	20,036.58	23,246.96	43,283.54
Equipment	57,209.32	212,534.67	269,743.99
Other expenditures	17,011.69	80,026.14	97,037.83
Total	$275,676.11	$689,850.38	$965,526.49
Balance	$53,203.84	$19,906.74	$73,110.58

Of the interest paid $487,500 was on bonds of the company, and $47,670 on bonds of leased lines.

The President states in his report that when the property came into possession of the present organization it was greatly out of repair and the lines were incomplete. Extended repairs and improvements were necessary. The report says:

"The work thus begun has resulted in an extension of the company's main line from Plymouth Junction to Albert Lea, in Southern Minnesota, where connection is made with the Minneapolis & St. Louis Railway. With this connection at Albert Lea, and connection at Burlington, Ia., with the Chicago, Burlington & Quincy Railroad south, a through line from St. Louis, Mo., to Minneapolis, Minn., has been practically established.

"The Pacific Division of the company's railway, at the time of purchase by this company, extended in a northwesterly direction from the point of junction with the main line at Vinton to Traer, a distance of only 25 miles, but in carrying out the system adopted by our predecessors, this line has been extended to Clarion, the county seat of Wright County, a distance from Traer of 78.04 miles.

"The Muscatine & Western Branch, which extended from Muscatine westwardly to Riverside—a distance of 30 miles—at the time of the organization of the present company, has been extended to the valuable and inexhaustible coal mines of Keokuk County, and from thence to Montezuma, the county seat of Poweshiek County, a distance from Muscatine to Montezuma of 57 miles. * * *

"In addition to these extensions and connections, a connection has also been made with Iowa City by a line of road extending from Elmira, on the main line, via Iowa City, to Riverside, where connection is made with the Muscatine & Western Division, a distance of 23.63 miles. * * *

"The surplus earnings of the road, in excess of operating expenses and payment of fixed charges, during the period covered by this report, have been devoted to the improvement and equipment of the company's railway."